November 3, 2023

The Honorable Douglas L. Parker
Assistant Secretary for Occupational Safety and Health
U.S. Department of Labor
200 Constitution Avenue, NW
Washington, DC 20210

RE**:** Report of the Small Business Advocacy Review Panel on OSHA's Potential Standard for Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings

Dear Mr. Parker:

The Small Business Advocacy Review Panel (the Panel), established in accordance with the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), is transmitting to you this report on the Occupational Safety and Health Administration's (OSHA's) potential standard for Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings.

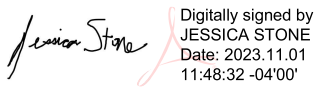
The Panel consisted of representatives from OSHA, the Office of Information and Regulatory Affairs (OIRA) within the Office of Management and Budget (OMB), and the Office of Advocacy (Advocacy) of the Small Business Administration (SBA). The Panel was chaired by Jessica Stone of OSHA's Directorate of Standards and Guidance (DSG). The staff from the agencies, including the Department of Labor's Office of the Solicitor (SOL), who participated in the development of the Panel's report include: Bruce Lundegren (Advocacy), Stephanie Fekete (Advocacy), Josh Brammer (OMB/OIRA), Steve Schayer (OSHA, DSG/OPH), Zoe Petropoulos (OSHA, DSG/OPH), Ashley Bieniek-Tobasco (OSHA, DSG/OBH), Jason Hammer (OSHA, DSG/OPH), Helena Brijbasi (OSHA, DSG/OPH), Jean Gleason (OSHA, DSG/OPH), Dana Voinier (OSHA, DSG/OPH), Eduardo Hernandez (OSHA, DSG/OTF), Andy Levinson (OSHA, DSG), Lisa Long (OSHA, DSG), Joe Coble (OSHA, DSG), Patti Downs (OSHA, DSG/OTF), Jennifer Lawless (OSHA, DSG/OCHM), Annette Iannucci (OSHA, DSG/OCHNM), Seleda Perryman (OSHA, DSG/OIQPR), Andrew Blevins (OSHA, DSG/OIQPR), Belinda Cannon (OSHA, DSG/OIQPR), Tiffany DeFoe (OSHA, DSG/OCHM), Pamela Barclay (OSHA, DSG/OTF), Inanje Mintz (OSHA, DSG/OTF), Anissa Harmon (OSHA, DSG), Erin Fitzgerald (DOL, ASP), Joseph Berndt (SOL), Joey Gilliland (SOL), Linda Wiles (SOL), Jennifer Levin (SOL), Emma Goold (SOL), Johnda Bentley (SOL), Stephanie MacKenzie (SOL), Chuck McCormick (OSHA, DSG/ORA), Cherron Cox (OSHA, DSG/ORA), Brian Sloboda (OSHA, DSG/ORA), Grace Shin (OSHA, DSG/ORA), Rachel Carse (OSHA, DSG/ORA), and Carl Lundgren (OSHA, DSG/ORA).

On August 25, 2023, the Panel was officially convened by OSHA. On September 7, 12, 13, 14, 18, and 19, 2023, the Panel members, along with the Small Entity Representatives (SERs), participated in six videoconferences providing the opportunity for an open discussion regarding the potential standard for prevention of heat injuries and illnesses. In addition to the videoconferences, the SERs provided the Panel with written comments.

The attached Panel Report includes the Panel's findings and recommendations. Also included as appendices to the report are the list of SERs, the SERs' written comments, results of polling questions asked during the videoconferences, and the documents provided to the SERs (the Regulatory Framework, the SER Background Document, and the List of SBAR Panel Questions). SBREFA requires that this Panel Report and its attachments become part of the rulemaking record. Jessica Stone, the chair, will arrange for the posting of this report into the docket at http://www.regulations.gov, the Federal e-rulemaking portal.

The Panel wishes again to thank the SERs for their participation in the early stages of the rulemaking process for this potential standard. The Panel particularly appreciates the time that the SERs took to review the lengthy SBREFA materials sent to them and for providing their comments to the Panel.

Sincerely,



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Report of the Small Business Advocacy Review Panel on OSHA's Potential Standard for Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings

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Executive Summary

Heat is the leading cause of death among all weather-related phenomena in the United States. Excessive heat exacerbates existing health conditions and can cause heat stroke and even death. Workers in both outdoor and indoor work settings without adequate climate controls are at risk of hazardous heat exposure.

In August 2023, OSHA convened a Small Business Advocacy Review (SBAR) Panel to provide comments on OSHA's potential standard for Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings. Topics considered by the SBAR Panel included potential options for:

-A programmatic approach to heat injury and illness prevention;
-The scope of a potential standard;
-Heat hazard identification, assessment, prevention and control measures;
-Medical treatment and heat-related emergency response procedures;
-Worker training; and
-Recordkeeping.

OSHA sought input from Small Entity Representatives (SERs) on these options.

Eighty-two SERs spoke to the Panel during six sessions in September 2023. These sessions took place on September 7, 12, 13, 14, 18, and 19. Of these 82 SERs, 21 SERs came from the construction industry, 19 from manufacturing, 9 from landscaping, 7 from recreation and amusement, 6 from utilities, 4 from agriculture, and 13 from other impacted industries.

The Panel is issuing several findings and recommendations, the details of which can be found in the main body of this report. In summary, the Panel finds and recommends:

Flexibility and Scalability. SERs agreed and the Panel recommends that an OSHA standard should be flexible where practical with a programmatic approach that allows employers to tailor their program to their particular workplace.

Heat Triggers. SERs felt that the heat triggers that OSHA suggested were too low and were confusing. The Panel recommends that OSHA reconsider and simplify the presentation of the heat triggers and provide additional data supporting the levels selected.

Supporting Data. SERs felt that the numbers of illnesses, injuries, and fatalities reported in the BLS data are low relative to the total worker population, suggesting that a Federal heat regulation is unnecessary. The Panel recommends that OSHA explore whether and how the injury, illness, and fatality data support the promulgation of a heat standard.

Recordkeeping. SERs felt that some recordkeeping requirements that OSHA had suggested were unnecessary, burdensome, or infeasible. The Panel recommends that OSHA reconsider or simplify recordkeeping of temperature monitoring and not require documentation of rest breaks or first-aid-only heat-related illnesses or injuries unless necessary or appropriate.

Temperature Measurement. Many SERs said they currently monitor temperature using a variety of methods, but SERs with indoor settings and mobile workforces thought monitoring might be difficult. The Panel recommends that OSHA allow flexibility in monitoring methods and clarify requirements for those with indoor settings and mobile workforces.

Rest Breaks. The majority of the SERs said that they allowed their employees to take rest breaks when they need to, but many objected to OSHA specifying the frequency of rest breaks. The Panel recommends that OSHA consider allowing employers some flexibility in the frequency of rest breaks and clarify what activities employees can engage in during rest breaks.

Water. SERs universally reported supplying drinking water to their employees. Some SERs found the term "suitably cool" to be vague. The Panel recommends that OSHA consider eliminating or better defining that term.

Acclimatization. Many SERs objected to OSHA's option for gradual acclimatization to heat, requiring employees to gradually ramp up their exposure to heat over the course of a few days. Many SERs reported having some form of enhanced supervision or "buddy system" for workers who were new to the hot working conditions. The Panel recommends that OSHA provide options for acclimatization to allow employers flexibility in determining the best method for acclimatizing their workers.

Solo and Mobile Workers. SERs with employees who work alone or travel between jobsites during a shift were concerned about implementing some provisions like supervision, temperature monitoring, and rest breaks. The Panel recommends that OSHA offer flexibility for these employers and clarify the employer's responsibilities for employees in these circumstances.

Training. SERs were largely in agreement that training is crucial to protecting employees from heat hazards. The Panel recommends that OSHA include a robust training provision in a heat standard. The Panel also recommends that OSHA continue to provide support for employer training efforts by providing training materials, sample curriculum, videos, and/or other methods.

Heat Injury and Illness Prevention Programs. Many SERs reported having heat programs in some form, and many were supportive of OSHA requiring a written program in a heat standard. Some SERs suggested that very small employers should be exempt from having a program in writing. Most SERs agreed that a program should be reviewed and updated annually. The Panel recommends that OSHA include a requirement for a written heat injury and illness prevention program that allows employers the flexibility to tailor their plans to their specific industry, location, and activities, that updates to the program be required annually, and that any situations where additional updates are required are clearly delineated. The Panel also recommends that OSHA consider exempting very small employers from having a program in writing.

Cost/Time Estimates. SERs disagreed with some specific time and cost estimates. The Panel recommends that OSHA review time and cost estimates and revise where appropriate.

Engineering and Administrative Controls. SERs were concerned that some engineering controls (like air conditioning, fans, and misting fans) and administrative controls (like adjusting start times and monitoring employees) would be difficult or infeasible to implement. The Panel recommends that OSHA offer flexibility to allow employers to implement controls that are feasible and appropriate for their workplace and activities.

The Panel thanks the SERs for their thoughtful participation and the government staff who worked behind the scenes to make this process successful. This process has been extremely informative and has provided valuable insights to OSHA as the agency moves forward with rulemaking that considers the Panel's findings and recommendations.

1. Introduction

This report has been developed by the Small Business Advocacy Review Panel (Panel) for the Occupational Safety and Health Administration's (OSHA's) potential standard for Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings.
The Panel included representatives of OSHA, the Office of Information and Regulatory Affairs within the Office of Management and Budget, and the Office of Advocacy of the U.S. Small Business Administration.

On August 25, 2023, the Panel Chairperson, Jessica Stone of OSHA, convened the Panel under Section 609(b) of the Regulatory Flexibility Act as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA) (5 U.S.C. 601 et seq.). The Panel chose Small Entity Representatives (SERs) from industries that might be affected by the potential standard, which includes SERs from core industries that were identified by OSHA as industries that are expected to be most affected by the standard. The Panel also included SERs from industries that were not identified as core by OSHA. The SERs reviewed background materials related to these potential provisions and offered their advice and recommendations to the Panel. The Panel is deeply grateful to the SERs for taking the time to assist the Panel in examining these potential provisions.

This report consists of four parts and five appendices:

- **Part 1** is the introduction;
- **Part 2** explains why the agency is considering a potential standard for Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings;
- **Part 3** summarizes the oral and written comments received from the SERs;
- **Part 4** presents the Panel's findings and recommendations;
- **Appendix A** contains a full list of the Panel members and staff representatives from OSHA, the Department of Labor's Office of the Assistant Secretary for Policy and the Office of the Solicitor, the Small Business Administration's Office of Advocacy, and the Office of Information and Regulatory Affairs within the Office of Management and Budget;
- **Appendix B** contains a list of the SERs;
- **Appendix C** includes all of the written comments submitted by the SERs;
- **Appendix D** presents the results of polling questions asked during the videoconferences; and
- **Appendix E** contains the principal background documents sent to the SERs.

2. Reasons Why Action is Being Considered

Heat is the leading cause of death among all weather-related phenomena in the United States. Excessive heat exacerbates existing health conditions (e.g., asthma and heart disease) and can

cause heat stroke and even death if not treated properly and promptly. Heat-related illnesses are adverse clinical health outcomes that occur due to exposure to heat (e.g., heat exhaustion or heat stroke). A heat-related injury is an injury linked to heat exposure that is not considered one of the typical symptoms of heat-related illness (e.g., a fall that occurred while a person was experiencing dizziness related to heat exposure).

Workers in both outdoor and indoor work settings without adequate climate controls are at risk of hazardous heat exposure which may lead to heat-related illness or injury. Certain heat-generating processes, machinery, and equipment (e.g., hot tar ovens, furnaces) can also cause heat-related illnesses or injuries when effective cooling measures are not in place. Some groups may be more likely to experience adverse health effects from heat, such as pregnant workers, while others are disproportionately employed in work settings with higher risk of heat-related illness or injury, such as workers of color in essential jobs.

The Bureau of Labor Statistics (BLS) Survey of Occupational Injuries and Illnesses estimates that there have been 33,890 work-related heat injuries and illnesses involving days away from work between 2011–2020, for an average of 3,389 injuries and illnesses of this severity occurring per year during this period. Additionally, according to the BLS Census of Fatal Occupational Injuries, exposure to environmental heat has killed 999 U.S. workers from 1992–2021, with an average of 33 fatalities per year during that time period. These statistics for occupational heat-related illnesses, injuries, and fatalities are likely vast underestimates for several reasons, including: inconsistent reporting by medical professionals as a result of varying definitions of heat-related illness by jurisdiction, lack of recognition of heat as a causal or contributing factor to injury or illness, underreporting to BLS by employers, and workers not reporting injuries or illnesses due to stigma or fear, among other reasons.

OSHA has developed and published guidance with recommendations for heat injury and illness prevention. However, in the absence of a federal standard, multiple states have issued regulations to address heat hazards in the workplace. Five states have enacted laws that aim to protect employees exposed to heat: Minnesota (Minn. R. 5205.0110); California (Cal. Code of Regs. title 8, § 3395); Washington (Wash. Admin. Code § 296-62-095 through § 296-62-09560; § 296-307-097 through § 296-307-09760); Oregon (Or. Admin. R. 437-002-0156); Or. Admin. R. 437-004-1131); and Colorado (7 Colo. Code Regs. § 1103-15:3).

OSHA has received multiple petitions to promulgate a heat injury and illness prevention standard in recent years, including in 2018 from Public Citizen, on behalf of approximately 130 organizations. OSHA has also been urged by members of Congress to initiate rulemaking for a federal heat standard.

On October 27, 2021, OSHA published an Advance Notice of Proposed Rulemaking (ANPRM) for Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings in the Federal Register. With this publication, OSHA initiated the rulemaking process to consider a standard specific to heat-related injury and illness prevention. The standard would set forth employer

obligations and the measures necessary to protect employees to more effectively reduce the number of heat-related injuries, illnesses, and fatalities among workers. The ultimate goal is to prevent or reduce the number of occupational injuries, illnesses, and fatalities caused by exposure to hazardous heat.

Using stakeholder comments on the ANPRM, academic literature, best practices from state heat-specific standards, recommendations from OSHA's Heat Injury and Illness Prevention Work Group of the National Advisory Committee on Occupational Safety and Health (NACOSH), and other input from experts, stakeholders, and the public, OSHA has developed potential options for various elements of a heat-specific standard.

As part of the SBREFA process, OSHA presented SERs the potential options the agency has identified for various elements of a heat-specific standard to prevent or reduce heat injuries and illnesses in outdoor and indoor work settings. As discussed further in the SER Background Document, OSHA provided options for the following potential elements of a heat standard:

- Scope
- Heat injury and illness prevention program
- Hazard identification and assessment
- Hazard prevention and control measures
    - Engineering controls
        - Outdoor work sites
        - Indoor work sites
        - Vehicles
    - Administrative controls
        - Water
        - Acclimatization
        - Rest breaks
        - Supervision/observation
        - Other administrative controls
    - Personal protective equipment
- Medical treatment and heat-related emergency response
- Worker training
- Recordkeeping
- Communication on multi-employer work sites

OSHA sought input from SERs on how these potential options might affect the operations of their workplace. The input from SERs during the SBREFA process is summarized in Part 3 of this report.

3. Summary of SER Comments

The Panel hosted six conference calls on September 7, 12, 13, 14, 18, and 19, 2023 to gather input from Small Entity Representatives (SERs) on a potential standard, Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings. During these calls, the SERs were asked a variety of polling questions regarding a potential standard (see Appendix D). A number of SERs submitted written comments to the SBAR Panel (see Appendix C). OSHA also welcomed and received written comments to the rulemaking record from organizations who were not participants of the SBREFA process but had followed the activity of the Panel. Those comments are part of the rulemaking record and are available to the public at www.regulations.gov (Docket OSHA-2021-0009-1059). The following is a summary of the key issues raised during these conference calls and in the written comments from SERs.

Need for Regulation

Many SERs reported that they are doing most, or all, of what OSHA had included in the regulatory framework, and therefore a heat standard would not be beneficial and is unnecessary. However, some SERs noted that while SERs may be protecting their workers from heat-related illness and injury, other employers may not. Some SERs suggested that bad actors will not comply with an OSHA standard and felt that creating a standard would primarily penalize responsible employers. One SER suggested that OSHA target companies failing to protect workers from heat. Another SER suggested that OSHA should assist employers who are not adequately protecting their employees.

Several SERs said they would prefer that OSHA provide guidance instead of a rule. Some SERs noted that they adopt guidance provided to them from professional trade associations (e.g., Associated General Contractors of America (AGC) and the National Association of Tower Erectors (NATE)), and that an additional regulation is unnecessary. One SER asked that OSHA provide information on research on the success of heat illness prevention methods to justify the need for a heat standard.

Most SERs indicated that they understood that heat exposure was a workplace hazard in some sectors, occupations, or work areas. However, many SERs said they had experienced no heat-related illnesses or injuries in their workplace; many attributed that to the fact that they had heat programs in place to protect their employees. A few SERs reported that they had seen or experienced heat illness (frequently associated with another underlying medical condition). Some SERs saw these illnesses during activities unrelated to their current workplace, such as military time or while working as an athletic trainer. However, a few mentioned that they had employees who had experienced heat illnesses or had witnessed heat illnesses among employees of other employers working at the same job site.

When polled during the September 12th session on "What type of heat-related injuries and illnesses have employees at your workplace experienced?" where respondents were able to select multiple answer choices, 57.1 percent of the 14 respondents indicated "first aid," 42.9 percent

selected “none,” and 21.4 percent chose “required more than first aid but no lost work time.” No SERs selected the options for “fatal” or “required more than first and missed day away from work.”

A few SERs questioned the justification for a heat standard, referencing the BLS data on heat-related injuries and illnesses provided in the SER Background Document. The SERs felt that the numbers are low relative to the total number of employees nationally, suggesting that any action or change is not needed. One SER asked if OSHA is “putting the cart in front of the horse” and suggested that the agency “take a step back” and “take a hard look” at the number of heat-related incidents and reconsider whether the data justify the need for a standard. One SER referenced the BLS data that show that there have been about 1,000 deaths in 30 years or approximately 33 per year, which they thought seemed low, and questioned whether that justified OSHA promulgating a standard.

Several SERs questioned the need for a rule given the number of heat-related illnesses and injuries at their company or within their industry. One of these SERs noted that of the 6,500 health-related incidents that have resulted in workers’ compensation payment in their industry in their state, only 13 were heat-related claims and most were minor in the last 30 years. Another SER indicated that the amusement and theme park industry employs one million employees across the United States but has had only two heat-related hospitalizations since 2018, while a different SER in the construction industry stated that they had no heat-related injuries in the last 32 years of their operations. Another SER in the construction industry stated that they had no heat-related issues (or other reportable injuries) since the business began operations in 1999.

A few SERs suggested that OSHA provide additional information on the industries where heat-related incidents occur most frequently. A few of these SERs requested the data on heat-related injuries and illnesses be published in the record by detailed industry. One SER suggested that OSHA 300 reporting requirements for heat-related injuries and illnesses should replace existing requirements to report work-related poisonings, noting that the number of work-related poisonings is low, at approximately 600 incidents in 2019. The SER argued that this would provide detailed information (size and industry) on where heat-related incidents occur.

A SER from the Northeast region said there are few hot days or heat-related injuries and illnesses at their workplace. This SER further noted that they are more interested in cold-weather regulations because they experience more cold-related hazards like wind chill than heat.

Many SERs felt that a standard is unnecessary because there are existing incentives that cause employers to implement heat-related protections at their workplace. Several SERs shared that they are facing a tight labor market and will lose employees to their competitors if they don’t provide them with a safe workplace—this incentivizes employers to take workplace health and safety seriously, making a heat standard unnecessary. One of these SERs said that if an employer does not take their workers’ safety and health seriously, employees will quit or complain on

social media or employer review sites which would hurt the employer's ability to hire people. A few SERs told the Panel that their workers' compensation system creates an incentive to keep their workers safe from all hazards including heat injury and illness. Some SERs said that having a poor safety record would negatively impact their ability to secure contracts for public works projects.

A few SERs said the Occupational Safety and Health Act's general duty clause should be sufficient to protect workers from heat-related injuries and illnesses, making a heat-specific standard unnecessary. In jointly submitted written comments, two SERs expressed concerns about the occupational nature of heat hazards:

> [T]he agency should be mindful of the [U.S. Supreme] Court's viewpoint and position on the limitations of OSHA's authority to regulate generalized hazards that are not uniquely "occupational" in nature. […] OSHA should therefore proceed cautiously and carefully in this rulemaking.

These SERs noted what they consider to be "red flags" and suggested alternatives to promulgating a standard:

> a. Heat exposure could be viewed as the very type of ubiquitous, broad hazard to which all humans are exposed, rendering a standard designed to control and protect against it the very type of hazard the Supreme Court cautioned against;
>
> b. Heat exposure in both indoor and outdoor environments is undoubtedly a recognized hazard for which OSHA has ample authority under the General Duty Clause to control (including through its Heat National Emphasis Program); and
>
> c. Developing the boundaries, requirements, and thresholds for a heat illness standard presents particular challenges to the agency because there are so many personal health conditions and risk factors (obesity, high blood pressure, diabetes, etc.) that greatly impact the onset of heat-related illness.

Some SERs stated that they believe that there is a need for a heat standard, and some stated that a potential standard based on the regulatory framework would not be too burdensome. One SER expressed concern that, in the absence of a national standard, some employers may exploit vulnerable workers, such as undocumented or young workers. Another SER with an indoor, climate-controlled facility stated that they did not believe that the standard would be overly burdensome for their facility and that the regulatory framework provided to SERs is a "phenomenal program." Another SER in the agricultural sector was interested in learning more about methods to reduce heat stroke, as they are currently relying on "country methods." While the Panel heard overwhelming support from SERs for protecting their workers from heat and other hazards, one SER stated in written comments they had trouble convincing management to implement a Heat Injury and Illness Prevention Plan. In another written comment, a SER stated a heat standard would be greatly beneficial because they believe heat injuries and illnesses are underreported. This SER said that having a standard in place will cause companies to follow best procedures and practices for protecting workers, resulting in decreased absenteeism and increased productivity.

Potential Overlap or Conflict with Other Requirements or Regulations

During the videoconferences, several SERs shared potential areas of overlap or conflict with existing requirements or regulations.

A few SERs in the transportation sector noted areas where a heat standard may conflict with Department of Transportation (DOT) requirements. One SER indicated customers may or may not provide their company's delivery drivers with an air-conditioned place to wait in when the delivery is being offloaded. This SER told the Panel, however, that DOT requires drivers to be within a certain distance of the truck when offloading, so the workers would not be able to wait in a cooled area during that time anyway. Another SER in the transportation sector mentioned that in some jurisdictions there are fines associated with idling vehicles, which limits the ability of drivers and other workers to take breaks in air-conditioned vehicles. Another SER mentioned that during hotter periods, they ask workers to come in earlier to beat the heat; however, start times are limited by local noise ordinances. A SER questioned whether OSHA considered how additional rest breaks would work in conjunction with DOT's hours-of-service regulations for drivers. Another SER requested that OSHA consider a memorandum of understanding (MOU) between OSHA and the Coast Guard, specifically so that OSHA does not enforce the OSH Act for seamen on vessels while creating a standard.

A few SERs noted potential conflict between the regulatory framework and other regulations. One of these SERs representing a tree care company shared concerns about the use of personal protective equipment (PPE) required by the Department of Agriculture (USDA) that may contribute to heat. Another SER in the agricultural sector stated that they are limited by USDA requirements to providing plain non-flavored water to their workers in the field. Another SER submitted a written comment stating that in foundries producing certain alloys, there may be a conflict between the proposed water provision and OSHA's lead standard. They said that the lead standard requires that water be placed "in a separate, covered area." Another SER expressed concerns that a heat standard requiring "innovative hydrophobic fiber solutions" as a form of PPE may conflict with the Environmental Protection Agency's (EPA's) "upcoming rules on [per- and polyfluoroalkyl substances (PFAS)] and [perfluorooctanoic acid (PFOA)]."

Two SERs jointly submitted written comments detailing two areas they believe should be considered for a potential conflict between existing laws and the regulatory framework. The SERs asked OSHA to consider the impact that break requirements may have on federal and state wage and hour laws. They also said that the contribution of personal risk factors to heat illness should not result in a heat standard that requires employers to collect information or inquire about personal risk factors saying that "[s]uch a requirement would be an invasion of employees' privacy, and would implicate concerns about the confidentiality of medical information […] numerous state and federal laws, including anti-discrimination laws, the Americans with Disabilities Act, etc.(…)."

A SER noted industry-specific guidelines or requirements that they believe may conflict with a heat standard. In written comments, this SER from the utilities sector cited special circumstances that make heat injury and illness prevention at their workplace more difficult than for other workplaces, such as the power plant having emergency outages due to Midcontinent Independent System Operator (MISO) resource adequacy requirements.

One SER from the Southeast region in the manufacturing industry shared how adapting a program from a different state didn't work well for them. They were told by the local "area office" to develop a heat program based on the California heat program, after one of their truck drivers had a heat-related heart attack at one of their customer's sites. This SER felt that California's program (which, they said, seemed geared mainly toward agricultural workers) doesn't work well for companies like theirs, where workers may be alone without a supervisor and dispatched to multiple regions with possibly different heat advisories.

Flexibility and One-Size-Fits-All

Many SERs were concerned that OSHA would attempt to make a one-size-fits-all standard that is difficult for regulated entities to comply with. SERs agreed that an OSHA standard should be flexible with a programmatic approach that allows employers to tailor their program to their workplace. SERs thought this flexibility was necessary for employers to prevent heat-related injuries and illnesses in their workplaces most effectively.

The SERs pointed out several areas in the regulatory framework where they believe flexibility is needed. These areas, discussed further in this report, included, among others: size of business, personal risk factors, workplace characteristics (e.g., industries, outdoor versus indoor work settings, fixed versus mobile work sites, lone workers), and geography.

Many SERs thought the employer should determine what approaches should be implemented to address heat based on the conditions in their work settings as long as those approaches adhere to the regulatory framework. One SER asked whether the regulatory text could list multiple options employers can choose from. Two SERs also suggested in their jointly submitted written comments that OSHA "keep the options as options, but to also expand upon them, and give employers the ability to tailor their programs," saying that "otherwise, any rule that is promulgated could be economically burdensome and cost prohibitive."

Many SERs felt that, if OSHA were to propose a heat standard, in addition to being as flexible as possible, it should be simple. One SER requested that OSHA "make the rule simple stupid" to promote compliance. Another SER said that a standard should be easy to understand so that it "won't need interpretation letters." In jointly submitted written comments, two SERs said that "striking a balance" between flexibility and "clear regulatory language" is crucial for a standard to be effective—while the standard should be flexible so it could be tailored to each workplace, vague language can make it difficult for employers to understand how to comply with the standard and may lead to potential non-compliance. These SERs were concerned that many parts

of the regulatory framework are too vaguely worded. Other SERs also asked for clarity in multiple areas of the regulatory framework, which are discussed further in this report.

Small Business Impacts

Many SERs were concerned about a heat standard's potentially disproportionate impact on small businesses. Several SERs stated their belief that a heat standard would place a high burden on small businesses due to staffing constraints. Some SERs stated that while larger companies may have a safety staff member tasked with implementing standards, small businesses should not be assumed to have the same capacity. Another SER voiced similar concerns about small businesses' lack of manpower to implement and pay for a heat injury and illness prevention program (HIIPP). On the other hand, one of these SERs stated that even though the standard may impact the profitability of small businesses, if it is simple and easy to implement, it would be worthwhile if it prevents the death of an employee. In a written comment, one SER noted that "a small company does not necessarily mean an income deficient company."

One SER felt that stricter regulations would make it harder for a very small company doing seasonal work to grow their business and to succeed in their industry.

Some SERs provided feedback on ways to mitigate the burden on small businesses. A few SERs noted that an OSHA-provided HIIPP template could reduce that burden. On the other hand, one SER expressed concern in written comments that an OSHA-provided template would not be "sufficient for all industries" because a generic template would not account for the "unique manufacturing environment and process for [some] industries." Other SERs opined that a rule needs to be performance-based and revolve around training; otherwise, small businesses might be unable to afford it. In jointly submitted written comments, two SERs also supported a standard that is centered on training, adding that OSHA should provide employers with "templates for heat illness training as part of a non-mandatory appendix to any standard."

No Individual is Alike

Many SERs told the Panel that individual physiological differences between workers contribute to how well a person tolerates heat. Some SERs were concerned that it would be difficult to consider those personal risk factors when developing a heat program in response to a potential heat standard. Some SERs opined that most heat illness accidents are caused by underlying health factors, hydration preferences, or behavior outside of work hours (e.g., alcohol use) and wondered if OSHA could do anything to address those factors. A few SERs stated they were concerned about their liability when heat-related incidents are aggravated by underlying health conditions or medication.

Other SERs shared that employees will drink what they want and often prefer caffeinated beverages, potentially impacting hydration. SERs reiterated these concerns in written comments, asking that OSHA "state explicitly" that personal risk factors can cause heat illness and suggesting that a standard "have a section on the employee responsibilities, including the role of

certain foods and caffeinated products, avoiding recreational drugs, and staying hydrated in high heat."

Some SERs elaborated on the challenges that they face when employees have underlying health factors that may make them more vulnerable to heat stress. One SER argued there is no temperature threshold for heat stroke and said that some people will have problems at lower temperatures while others will not. One SER stated that because of the Health Insurance Portability and Accountability Act (HIPAA), they do not ask their employees about preexisting conditions, but some workers don't do well in the heat—some cannot even work in 70° F or 75° F. Some SERs felt that medical fit-to-work evaluations may help identify workers at higher risk of heat-related injury or illness. However, one SER shared their experience of putting employees through this type of evaluation and found it costly and unable to catch all workers that experienced issues with heat tolerance. Another SER noted that they try to address the issue of underlying health conditions during the hiring process when they reiterate that employees must be in "landscape shape" in order to be able to perform the work the company does. One SER provided an example of a pregnant employee that monitored themself during the summer as their pregnancy progressed so that they could determine when to take breaks as needed.

Potential Scope of Rule

Multiple SERs commented or asked OSHA to clarify the possible scope exemptions in the regulatory framework. A SER representing a tree care company asked whether outage restoration work after storms would be considered exempt under the regulatory framework. Without such an exemption, this SER was concerned that an OSHA heat standard could severely affect their "ability to restore power," saying in written comments that "a failure to restore the power grid can have significant consequences such as a loss of power at hospitals, nursing homes, correctional facilities, and similar facilities." Two other SERs also stated that they needed to prioritize emergency operations. One of these SERs, representing an electric co-op, stated that safety protocols depend on whether it's a "blue sky day" with good working conditions or responding to an outage where the conditions may be poor, but work needs to be completed regardless. Another SER from a fire department indicated that the heat index becomes irrelevant in an emergency because they need to respond to the emergency regardless of the heat. This SER followed up with a written comment reiterating their concern that "a mandated rule regarding temperature exposure limits, required work-to-rest ratios, PPE requirements, and rehabilitation procedures" would be difficult to adopt in their industry.

Another SER commented that they found the regulatory framework's language concerning possible exemptions confusing, including those related to sedentary work or work in spaces with mechanical ventilation keeping temperatures below 80° F. In written comments, one SER requested that OSHA provide a clear definition of what is meant by the potential scope exemption for sedentary work and said that while they like the exemption, they have concerns about the implementation of that exemption option at their workplace that has a wide range of jobs, even within departments. They believe that exemption for sedentary workers would result

in differences in break schedules and shifts and questioned whether they would be able to implement the potential standard in their workplace.

Regarding the possible exemption of very small businesses from requiring a written HIIPP, one SER said in written comments that if OSHA were to put forth the requirement for a written program, the agency should "stay consistent with other written program requirements and exempt employers with fewer than 10 employees from this requirement (See 1926.35(e)(3))." Relatedly, a SER representing the amusement and theme park industry wondered if they would be exempt from compliance, based on the 10-or fewer-employees exemption, when their workforce drops below 10 during their off-season. In written comments, this SER suggested that OSHA should "use full-time permanent employees to determine what constitutes a small business, not all employees."

A SER with 10 employees thought that the regulatory framework's example threshold for exempting employers with 10 or fewer employees from requiring a written HIIPP seemed very low. Another SER agreed, suggesting that the exemption threshold be increased to "maybe 21 employees or more." This SER felt that the written program as outlined in the regulatory framework would significantly burden small employers and that the exemption threshold should be based on several factors such as geographical location, not just employer size.

In jointly submitted written comments, two SERs said:

> [I]t should be made clear that any heat illness prevention standard should not apply to drivers in air-conditioned or fan-ventilated vehicles, and that this should include related work drivers may conduct outside the vehicle, such as pickup and delivery, so long as there is unimpeded access to the air-conditioned cab at all times.

These SERs cite challenges of monitoring and ensuring that drivers, who typically work alone, maintain air conditioning at cool enough levels throughout their trips. They also say that it would be impossible for employers to determine where and when the "heat standard might be triggered" because temperatures vary by area and with time—drivers move to areas of different temperatures and unexpected traffic can affect their expected times of arrival.

Several SERs also suggested that the type of industry should also be considered as a potential scope exemption. Many SERs told the Panel that a heat standard would not work for the wide variety of industries currently covered by the regulatory framework. A few SERs suggested that OSHA should limit the standard to industries where heat-related incidents are occurring. In jointly written comments, two SERS from the die casting industry urged OSHA to exempt indoor industries "that without heat cannot manufacture a product." These SERs cited their safety record as evidence that "nation-wide indoor heat rule is unnecessary for improving the safety" in their industry.

Some SERs wondered how a single heat standard would apply to settings where employees are engaged in indoor work, where some employees work outdoors and others indoors, or where employees work inside structures that are open to the elements (i.e., a partially constructed

building or a building where garage-style doors are kept open). In written comments, one SER said that "OSHA does not specifically identify what is considered to be defined as 'indoor' and/or 'outdoor;' therefore it is very difficult to determine what should be done" to address heat-related concerns. Another SER suggested that a rule covering all heat exposures should be compartmentalized into process heat, hot work, ambient heat, and environmental heat. In jointly submitted written comments, two SERs in the construction industry recommended that a standard "focus on and be limited in application to outdoor settings only, segregating regulation of indoor heat for a potential separate rulemaking." These SERs argued that, since the majority of serious heat-related illnesses occur in outdoor work environments, OSHA should prioritize regulation in those settings.

In a written comment, a SER stated that they did not think any employer should be exempt from the standard, pointing out that "even health care workers work outside at some point or another." Another SER agreed in another written comment, stating that "risk of heat illness could happen to any employee in any size business."

Hazard Identification and Assessment: Heat Triggers and Work Site Measurement Methods

Many SERs reported that they already conduct heat hazard assessments at their workplace. SERs were polled on the frequency of these assessments during the September 12th session. They were asked, "How often do you conduct heat hazard assessments at your workplace?" Respondents were allowed to select multiple answer choices. Of the 13 respondents that participated, more than three-fourths selected "whenever conditions change." Conducting hazard assessments "one-time" was selected by two respondents, "never" and "annually" were selected by one respondent each.

Heat Triggers

Many SERs felt that the heat triggers that OSHA had suggested in the regulatory framework were too low. One SER worried that continually being on high alert would desensitize employees to heat hazards. Many SERs with outdoor settings said they would exceed the initial heat trigger for most of the year; others stated that they would exceed those triggers all spring and summer. Two SERs whose employees work in indoor non-climate-controlled environments and who currently monitor humidity and temperature said that they would be above the trigger often in the summer and recommended a higher trigger. A SER in the manufacturing industry said that it would be impossible to use mechanical ventilation to keep indoor temperatures below 80° F. Several SERs asked OSHA about the science and research behind the heat triggers in the regulatory framework (Table 1). One of these SERs requested in written comments that OSHA release the data the agency used to justify these heat triggers. This SER thought it is especially important that OSHA release these data if they are based on incidences of heat-related illnesses, adding that "the ability of small businesses to understand what data OSHA uses to support the occurrence of heat related illnesses at these temperatures will allow employers to better understand how a proposed heat standard might be applied [to them]."

SERs however also acknowledged that heat-related illnesses can happen even below a heat trigger. Some noted that personal risk factors and the nature of the work (e.g., whether work is strenuous or not) impact the risk of heat-related illnesses. Therefore, one SER also suggested having "no number" as a heat trigger and leaving it to the supervisor and individual crews to decide when to hydrate and cool down. Another SER agreed, saying that, although they understand the value of having tiered triggers (initial and high heat), they were concerned that the thresholds presented in Table 1 would not work for everyone. Another SER made a similar comment, saying that their normal summer temperatures (upper 80s F) might be tolerable for some employees but might be dangerous to work in for their older employees.

Several SERs stated that the heat triggers should be kept simple and easy to adopt. One SER agreed, stating that they did not understand the difference between the initial and high heat triggers and that having two triggers is too complex. Some SERs suggested using the National Weather Service (NWS) heat advisory as a single measure for a heat trigger tailored to local conditions. A SER representing a water park made a similar suggestion to tailor heat triggers to local conditions, suggesting in written comments that OSHA use trigger levels tied to "heat advisories or sustained temperatures 10–15 degrees above seasonal averages."

Many SERs questioned whether the heat triggers were appropriate across different regions and said that they thought it would be hard to work at the heat triggers discussed in the SER Background Document. Most SERs agreed that a heat standard would ideally take regional differences in temperature and climate into account (within states as well as across states). A SER questioned the rationale behind having the same initial heat trigger in New Hampshire and Florida. A SER from the Midwest region mentioned that 80° F is an "easy day" where their company is located. A SER from the Southern region said they and their employees are comfortable working at a heat index of 83° F but imagines this would be a different story for employers and workers in Maine. This SER also mentioned that their state has three different climates, further complicating their heat protection activities. Another SER from the Western region raised a similar point: their state's northern and southern parts have different climates due to different altitudes. Another SER expressed concern with using a set heat trigger in geographic areas with variable weather patterns, such as those where it is 40° F one day and 70° F the following day. One SER specifically suggested setting heat trigger by energy conservation heat code zones.

A few SERs also shared other factors that they believe should be incorporated in the determination of any heat trigger. One SER requested that OSHA consider the impact of additional factors that contribute to environmental heat in their options for hazard assessment of work sites. The SER provided the example of how steel doors exposed to sunlight can further increase temperatures at a work site. One SER suggested that level of physical exertion be factored into temperature triggers, as exertion level contributes to heat issues.

Many SERs stated that they rely on measures of heat index or ambient temperature to set triggers at their establishments, and some provided examples of how they are currently using a specific temperature threshold to determine when to increase protection against heat-related injuries and illnesses. Several SERs (with both indoor and outdoor work settings) indicated that when the temperature reaches 95° F, they increase protections for workers (e.g., additional fluids, unscheduled breaks, monitoring of workers). One SER that does not currently use triggers to implement heat controls, agreed that 95° F would be a reasonable trigger. One SER indicated that starting at 90° F, and at 5-degree intervals above 90° F, they begin to "cascade different actions" such as extra breaks, provision of popsicles, and not allowing overtime. Another SER also mentioned that they use an ambient temperature of 90° F as a trigger at their workplace. One SER said they provide refreshments and additional breaks and increase fan and ventilation usage when the heat index exceeds 95° F. In written comments, another SER said that on days when the heat index is 95° F or higher, rest breaks include cool downs by way of vehicle air conditioning, shade, and drinking water or electrolytes. In written comments, a SER representing telecommunication tower erectors shared NATE's Heat Illness Prevention Program from Chapter 58 of the NATE Safety & Health Manual (NATE's HIIPP) that has requirements that are triggered at a temperature of 89° F for shaded cool down areas.

A SER in the manufacturing industry said they have a higher level of awareness when temperatures go higher than 85° F. This SER also mentioned that they ask employees to pay attention when the sun is shining because they have observed heat-related symptoms in employees more frequently when there is full sun.

Several SERs also identified multiple areas in the regulatory framework related to heat triggers where they believe it is unclear what employers are expected to do. For example, one SER was trying to understand what employers are expected to do when the forecasted temperatures are above the high heat trigger at noon but below the trigger for the rest of the day. This SER also mentioned that it is difficult to understand the language concerning the exception that allows employers to forego monitoring and implement relevant control measures if the work area meets or exceeds both (initial and high) heat triggers. Even if OSHA allows for this exception, this SER said in written comments they "strongly suggest" that "OSHA explicitly note in any proposed standard how often an employer would be required to monitor and specifically when employers may assume heat triggers are met without [monitoring]." A few SERs also asked for clarification on how a heat wave is defined, how it is related to the high heat trigger, and its significance. One SER suggested that a heat trigger not be reached until there is some number of consecutive days over a certain temperature.

Multiple SERs also commented that they found Table 1 to be too complicated to understand. They said that Table 1, with 6–7 columns, is too confusing and advocated for a simpler and easier approach backed by scientific evidence. However, SERs were divided as to the specific approach OSHA should take (discussed more in the Work Site Measurement Methods section below). In written comments, a few SERs also stated that there is a discrepancy between the heat

triggers in Table 1 and how the OSHA-NIOSH Heat Safety Tool App classifies temperatures. Two of these SERs noted in jointly submitted written comments that while the initial trigger presented in the regulatory framework corresponds to the app's "Warning" level, that is not the case for the high heat trigger, stating that "the high heat trigger when measuring onsite is 87°F heat index, whereas the OSHA-NIOSH Heat Safety Tool App's corresponding 'Danger' level is set at 95°F heat index."

Work Site Measurement Methods

Several SERs shared that they are already using monitoring equipment to track work site conditions. In two different sessions the Panel asked SERs, "Which of the following tools do you use to monitor heat at your work site?" as a polling question where respondents were able to select multiple answer choices. Responses were received from 24 SERs in total, 11 from the September 7th session and 13 from the September 12th session. Two-thirds (66.7 percent) of the 24 respondents reported using local weather forecasts to monitor work site temperatures. One-fourth (25.0 percent) of respondents indicated that they use the OSHA-NIOSH Heat Safety Tool App. Approximately one-fifth (20.8 percent) reported using standard thermometers, and the same number of respondents answered that they use the NWS's online calculator. Respondents also selected the option for other (8.3 percent) and wet bulb globe temperature (4.2 percent). In written comments, SERs also reported that they use mount thermometers and hygrometers.

A few SERs in an indoor manufacturing setting stated that they use WBGT monitors throughout the facility to monitor heat. A different SER stated that they have monitors in the facility that measure temperature and humidity, which then they feed into a National Oceanic and Atmospheric Administration (NOAA) calculator for more accurate heat index readings. A few SERs in these settings told the Panel that they manually record and chart temperature, heat index, and other weather conditions, and that it can be a labor-intensive process. Another SER currently monitoring and recording temperature for the Coast Guard suggested that OSHA keep the requirement simple, avoid requiring complicated weather equipment, and be clear on what areas need to be routinely monitored if the work site is not fixed.

Many SERs told the Panel that they rely on the OSHA-NIOSH Heat Safety Tool App to monitor the weather and temperature. One SER currently using the app said that they appreciate the heat-related information about heat stress and first aid; however, they noted that it can be cumbersome when they are working from multiple locations. In a written comment, one SER indicated that it takes two minutes to calculate the heat index manually using an equation that incorporates GPS coordinates as well as temperature and humidity data from the Weather Underground app and 45 seconds to look at the OSHA-NIOSH Heat Safety Tool App (includes "opening phone, looking at conditions, and closing the phone"). This SER reported that heat conditions are monitored at least three times a day. Another SER said that using the OSHA-NIOSH Heat Safety Tool App, when temperatures reach 72° F, they start sending out company-wide emails that include forecasts for the multiple metropolitan areas where their employees work that day and resources for heat illness safety and first aid.

A few SERs also mentioned other apps that they use to monitor heat conditions at their work sites. One SER said they use an app that measures wind, temperature, humidity, heat index, and forecasts. Another SER said that they use the Weather Underground app to monitor weather conditions.

SERs were divided on which measurement method is appropriate for hazard assessment. Some SERs objected to WBGT measurements and advocated for simpler monitoring methods such as the weather forecast or heat index. A few other SERs mentioned using local weather service heat indexes. Some SERs thought that WBGT measurements should not be mandatory because they believe they are complicated, require more expensive specialized equipment, and accuracy may vary among commercially available devices. Two SERs also said in jointly submitted written comments that WBGTs range in price from $100 to $300 with additional costs to maintain or replace equipment. In written comments, one SER said that the WBGT method, along with other complex methods, could "prevent subcontractors from recording accurate measurements" and expressed concern that this could "result in penalties for both the subcontractor and the general contractor." One SER supported WBGT measurements. This SER, having used a variety of monitoring equipment, advocated for the use of WBGT as a more accurate measure of heat severity.

The Panel polled the SERs that currently do not monitor heat during two different sessions September 7th and 12th (see question 8 in Appendix D for detailed results). These SERs were asked, "which of the following methods are you most likely to adopt if the heat standard requires hazard identification and assessment?" Respondents were allowed to select multiple answer choices. Combining the results from both sessions, three-fifths (60.0 percent) of the 12 respondents selected "tracking local weather forecasts." Slightly more than half (53.3 percent) of respondents answered "other," and one-third (33.3 percent) of respondents reported measuring heat index. Other options selected were using ambient temperature to monitor heat (13.3 percent) and wet bulb globe temperature (6.7 percent).

Some SERs expressed concerns about the usefulness of the OSHA-NIOSH Heat Safety Tool App. SERs with indoor settings told the Panel that these types of apps are not as useful to indoor settings. One SER noted that the apps do not provide WBGT readings, which they prefer to use because they believe the WBGT thermometer provides a more accurate representation of heat exposure. Another SER that uses the app stated that the app classifies 72° F as "needs caution," which they felt is too low for their needs.

A SER from a state with an existing heat standard was concerned with the heat index being used as a heat trigger because the term "heat index" as well as "wet bulb" or "dry bulb" could be confusing for many people. This SER recommended using "forecasted temperature."

Many SERs shared that they felt that it would be difficult to monitor temperatures at their work sites. One SER thought it would be infeasible for their employees to track the weather and told the Panel that they did not want to "make weathermen out of" their employees. Another SER

agreed in written comments, saying that the suggested "data maintenance and [monitoring]" in the regulatory framework is "complex and overwhelming" and that they are concerned the "seemingly constant monitoring would fall directly on our crew foreman, who are non-management and would be on the ground to apply any heat [monitoring]." Many SERs also mentioned that their employees and work crews are mobile and may work multiple work sites in multiple geographical locations. These SERs shared their concern that tracking the temperature forecasts and relevant heat triggers for the work site that each worker or crew is visiting that day is difficult; such tracking becomes a greater challenge if each worker or crew visits multiple work sites within a day.

Some SERs pointed out multiple areas in the regulatory framework related to monitoring where they believe the expectations for employers are unclear. Some SERs with indoor employees told the Panel that the temperature could vary based on which part of the facility the employees are working in. One SER mentioned having measured 15 different temperatures throughout their building. These SERs wondered which temperature should be used as a threshold for heat injury and illness prevention. Another SER said the regulatory framework is unclear about how frequently the employer is expected to monitor work site heat conditions to determine when temperatures are above the heat triggers. This SER also said in written comments that how frequently the employer is expected to monitor work site heat conditions is even less clear when temperatures "fluctuate in and out of OSHA's suggested heat triggers" throughout the day. In written comments, a SER shared some challenges that they faced while conducting hazard assessments at their indoor workplace. The SER stated that they had to "consider residual heat at the start of the shift," as their facility is closed for several hours from the afternoon to early morning. This SER said that assessments need to consider the variation in temperature, as in their case the building cools down after starting off above the heat trigger in the early morning hours.

Recordkeeping

Many SERs questioned whether the recordkeeping requirements that OSHA had suggested were necessary. They told the Panel that the recordkeeping requirements as outlined in the regulatory framework would be burdensome. One of these SERs said that the benefit of recordkeeping was not high enough to justify OSHA's potential recordkeeping requirements. Another SER indicated that they would rather spend time communicating with employees than recording information on paper. Other SERs mentioned that it would be infeasible to document rest breaks, and one SER suggested that OSHA offer some flexibility regarding documenting rest breaks. A SER questioned the accuracy of recordkeeping done by overloaded employees.

Most SERs who spoke on the issue thought that recordkeeping of daily temperature monitoring was unnecessary and would be burdensome to comply with. Some SERs said daily temperature logging would be redundant for outdoor workplaces, as the information is available from other sources.

Several SERs raised concerns about recordkeeping of heat-related injuries and illnesses requiring only first aid. One SER said that recordkeeping should be only for an injury as required with an OSHA 301 form. Another SER asked why OSHA is considering asking for records of first-aid-only injuries and illnesses that are heat-related while not requiring records of other first-aid-only injuries and illnesses that are not heat-related. Some SERs stated it was unclear what first aid means regarding heat illness. One SER asked the Panel to consider whether asking workers to take a break and hydrate because they appear to be hot would need to be captured as a first-aid incident. In jointly submitted comments, two SERs expressed concerns that requiring recordkeeping for heat incidents requiring first aid is an expansion of the Recordkeeping Standard and is "underground or backdoor rulemaking" and if OSHA wishes to adopt this change "it should do so through a separate rulemaking." These two SERs were also concerned that if the recordkeeping requirements in a heat standard include the collection of "personal risk factors-type information" that it "could fall within OSHA's medical records retention requirements (at 29 CFR 1910.1020)" and would require record retention for thirty-plus years.

However, a few SERs said that they are already tracking temperatures at work sites and recording training (general and heat-related). In the September 12th session, SERs were asked to respond to a polling question that asked, "How often do you record and maintain records on the heat conditions at your workplace?" Of the fourteen SERs that responded to the question, nearly two-thirds (64.3 percent) responded "Never," more than one-fourth (28.6 percent) responded "When temperatures exceed a heat trigger," and less than one-tenth (7.1 percent) responded "Daily." One SER said they are required to log temperature due to Coast Guard regulations but noted that the variation in conditions makes compliance difficult. Another SER said that their foremen create daily logs using the platform "PlanGrid" that collects information on the work site including temperature and other weather conditions. They stated that they do not need to manually record temperature, because there is a box that can be checked "to show the temperature, and […] weather conditions for the previous day, that day, and the following day." One SER recommended that the environmental monitoring recordkeeping requirements only apply when the employer is conducting hazard assessments.

Other SERs mentioned that it would be infeasible to document rest breaks, which OSHA had not included as an option under consideration, and one SER suggested that OSHA offer some flexibility regarding documenting rest breaks.

A SER asked about requirements to keep records "onsite" and asked for clarification whether this meant the records are kept at their multiple work sites or just in the main office. This SER noted that having records at each work site would not be feasible. This SER added that if OSHA's intent is that the records be available during an inspection, then requirements would need to clearly specify that records are to be kept at a centralized location available to OSHA inspectors. A few SERs also objected to a 30-year records retention requirement, which OSHA had not included as an option under consideration.

Hazard Prevention and Control Methods: Rest Breaks, Water, Acclimatization, Engineering Controls, Personal Protective Equipment, Supervision/Observation, and Other Administrative Controls

Rest Breaks

The majority of SERs told the Panel that they allowed their workers to take a break whenever the workers felt it was necessary. They emphasized that when and how long to take rest breaks should be left up to the employees and supervisor onsite, depending on various factors such as the individual employee's needs, nature of work, and workplace environmental conditions. Several SERs spoke against OSHA requiring 15-minute breaks every hour (which the agency had not included as an option under consideration); others said that requiring 15-minute breaks every two hours was unnecessary and/or unworkable.

During the September 7th, 12th, 13th, and 14th sessions, SERs were asked five polling questions regarding their current rest break practices (see questions 19 through 23 in Appendix D for more detailed results). Combining the results from all four sessions, SERs overwhelmingly (98.2 percent) answered that they provide meal breaks. On the topic of "meal breaks," SERs were polled as to whether these breaks were considered paid or unpaid, and nearly three-fifths (59.3 percent) of the 54 respondents indicated that meal breaks are unpaid, slightly less than two-fifths (38.9 percent) indicated that these breaks are paid, and one SER (1.9 percent) chose "no meal breaks offered." In addition to questions about "meal breaks," SERs were polled on non-meal breaks. They were first asked, "Do you allow employees to take breaks? Note: We are asking about any break other than a 'meal break', which typically lasts 30 minutes and is not required to be paid." In the four sessions combined, more than four-fifths (81.8 percent) of respondents offer these breaks to all employees. Respondents also selected the options for "no employees" (13.6 percent) and "some employees" (4.5 percent). Following up on that polling question, SERs were asked whether these non-meal breaks are considered "paid or unpaid time." Nearly all (95.8 percent) of the poll respondents stated that these breaks are considered "paid," and the remaining 4.2 percent indicated that the breaks are "unpaid. Employers were also asked, "Do you (the employer) decide how long/often the breaks can be, or can employees take breaks when they need to?" More than half (50.9 percent) responded that the "employee decides," nearly two-fifths (39.6 percent) selected "it depends," and almost one-tenth (9.4 percent) indicated that the "employer decides."

Several SERs did not object to mandated rest breaks and reported that this was already required or standard practice where they were located. A few SERs said that it was already a law in their state to provide employees with a 15-minute break every two hours regardless of their work type. A SER said that a mandated 15-minute break every two hours would not be a "huge issue" for them in most instances. Another SER said that they currently allow employees to work outside for a maximum of two hours, after which, they are required to take a 15-minute break in an air-conditioned break room.

SERs that are employers of unionized employees had mixed responses to mandated rest breaks. Two SERs said that two 15-minute breaks are in the labor contract; they added that they also allow additional breaks as needed. On the other hand, one SER said in written comments that the mandated rest breaks as presented in the regulatory framework conflicts with the rest breaks in their collective bargaining agreements. According to this SER, their union "did not want lunch breaks anymore and instead wanted to finish the day earlier," so their employees "typically pick up lunch and eat it in their truck on their way to the next job." This SER suggested that OSHA explain the impact of a heat standard's rest break requirements on current collective bargaining agreements and "explicitly note whether break times would no longer be an issue that the employer and union have to bargain."

Several SERs gave examples of how their employees take rest breaks as needed. A SER noted that while breaks may decrease production, employees' safety is more important. They said that the nature of the work or environmental conditions primarily dictates rest breaks. A SER said that employees performing more strenuous jobs like running a woodchipper might need more breaks than someone who is working on a mower with fans. Another SER made a similar comment: on days when the work is more labor-intensive, they said workers may need more breaks. A SER from the Southern region also provided a similar example: it can be in the middle of January and 75° F when workers would take additional breaks because they're doing labor-intensive work. A SER further noted that implementing mandated breaks is impractical because they believed the breaks a worker needs depends on what they are doing (e.g., a worker might not need two 15-minute breaks but six separate 5-minute breaks). Another SER noted that while they don't officially give breaks beyond a meal break, they do allow employees to take short breaks as long as it is during the part of the day when the job is less busy. A different SER noted that while they do not offer official breaks beyond a lunch break, they consider downtime for a particular task to be a "baked in" break. The SER offered an example of a 2-minute job that only requires 20 seconds of effort. One SER, a general contractor, said that they also tell their trade partners to encourage their people to take breaks. One SER in the construction industry said that they rely on the field managers and people in the field working side-by-side with the rest of their employees to use their experience to decide if they need to take a break.

Several SERs provided examples of different work tasks that may impact the ability to provide breaks. A few SERs representing telecommunication tower erectors told the Panel that it would be more dangerous and difficult to require workers to climb down from a working position in a tower to take a break in a climate-controlled or sheltered area. These SERs said that work at an elevated height is often cooler than work on the ground and that employees on the ground were encouraged to use an on-site construction trailer for breaks. Likewise, SERs in the roofing industry and contractors working in attics mentioned that climbing up and down ladders is more dangerous than other activities. They told the Panel that they would not want to require employees to climb up and down ladders to take mandated breaks that would not otherwise be necessary. Another SER representing a tree care company shared a similar experience where

mandated rest breaks resulted in "nothing but issues"; for example, a worker who is up on a tree almost finished with the job would have to come down to the take the break and then return to their position in the tree after the break, requiring more physical exertion. Another SER with construction crews that must wear lead protection said that the crews often prefer to get the work done before removing the required PPE rather than taking off and redonning the PPE in order to take a break. A different SER questioned how more frequent breaks would impact power restoration work, expressing concern that more frequent breaks would extend outages which could be a public safety issue.

Other SERs also provided examples how workflow impacts their ability to provide prescribed rest breaks. A SER in the construction industry said that they believed it is not feasible to stop and take breaks while doing critical concrete pours; instead, this SER reported that they rotate workers between more strenuous and less strenuous tasks during that time. Another SER said that they bring on additional laborers when they have jobs that involve pouring concrete in hot conditions so that less effort is needed from each employee since they are not able to take breaks during these activities. Another SER stated that, "workflow of your particular craft will determine when you need a break" and gave the example of the task of resurfacing roads where the arrival of asphalt dictates breaks. A SER in the agriculture industry said that it is very hard for them "to have somebody just walk away because those twenty or thirty seconds [of effort needed from an employee during a critical process] can be very important." Instead, workers are trained to work with each other and swap job tasks as necessary if someone needs to take a break.

Some SERs commented that they do not have control over rest breaks when employees are working remotely at clients' work sites and that it would be too burdensome for the employer to track and tell them to take a 15-minute mandated break every two hours. One SER was concerned about breaks for delivery drivers that must unload at a customer's facility since they have limited control over the site. The SER noted that most loads take three hours to unload, which makes it difficult to provide a break every two hours. The SER also said that the drivers may need to stay with the load, may not be allowed to enter air-conditioned buildings controlled by the customer for a break, and may not be able to idle the vehicle with air-conditioning running. Another SER with employees that drive chartered passenger vehicles mentioned that they can be limited in options for areas for breaks because the location of their stops is dependent on passenger needs. The SER noted that they can use a luggage bay as a shade structure for breaks. A SER said that their employees work alone remotely across multiple regions with possibly different temperatures. This SER said that keeping track of employees' compliance with mandated rest breaks and monitoring work site temperatures across multiple regions would be difficult. The SER further said they believed this would become more difficult if mandated rest break durations depend on whether the temperatures were at or above the initial heat trigger or high-heat trigger.

Several SERs noted that sometimes it can be difficult to push employees to take mandated breaks, as a few said that managers have to intervene to make sure that workers take the necessary breaks. One SER reported that some employees will work through breaks as they have a mindset to push through, although the company's policy allows employees to take breaks when needed. A few SERs also mentioned that some of their workers would prefer not to take breaks (to end work early) and will work through those breaks. Another SER said they've found that when employees are not compensated for breaks, some prefer to skip breaks. Several SERs raised concerns about employer liability if, despite telling workers that they need to take a rest break, workers do not do so but then get injured. Many of these SERs did not think that the employer should be held responsible if the employees refuse to take breaks. Two SERs said in jointly submitted written comments that the key to alleviating employees' concern of retaliation for asking for or taking rest breaks is "providing training/communication to our employees on the fact that they will not be retaliated against if they ask to take a break and/or do so," echoing their earlier comment that any heat standard should be centered around training.

A SER said they believed the supervisor should be responsible for ensuring the workers don't abuse rest breaks (i.e., take more than needed) and that the rest breaks are "reasonable." On the other hand, a SER said that they trust their employees to make the right judgment when taking rest breaks and said that their employees do not take advantage of being allowed as-needed breaks (this SER reported that they track productivity using jobsite management software).

Some SERs expressed concern regarding increased costs associated with breaks. One SER expressed concern that mandated break times would impact their ability to offer overtime work due to increased costs from paying for more or longer breaks at the overtime rate. Another SER thought that required breaks would impact profits for trade contractors paid by the job compared to hourly workers, as they are incentivized to finish the job as soon as possible. A SER suggested that if as-needed breaks are included in the standard, the language should be changed to "as needed to ensure reasonable safety" to encourage proactive breaks and discourage employees from waiting until they are sick to take a break.

Several SERs with outdoor employees shared examples of how certain engineering controls work or do not work for their rest break areas. One SER with outdoor employees stated they provide canopies with water and fans where employees can take rest breaks on hot days. Another SER with outdoor employees said they found it too difficult to use tents or canopies because they are not at one site for prolonged periods, instead, workers utilize their air-conditioned vehicles as cooling stations. A SER in the agricultural sector reported that they do not need to provide artificial shade for breaks, as workers are provided natural shade by their orchards. Some SERs stressed that the demographics of the workforce indicate different preferences for rest breaks. According to some SERs, employees may not want to be in an air-conditioned space (vehicle or otherwise) but preferred a shaded outdoor area. Another SER echoed this saying that some of their employees do not use air-conditioned breakrooms and lunchrooms because they feel that

moving from the heat to an air-conditioned area and back again is too draining. A number of SERs said that air-conditioned vehicles are available for workers to rest and cool down in. A SER that uses passenger vans to shuttle employees to work sites said that it would be impossible to provide simultaneous breaks to the employees in the vans due to lack of space.

Several SERs asked for clarification on the definition of rest breaks. Some SERs said that employees can rest while waiting for deliveries to arrive, driving between work sites, waiting for industrial processes to finish, conducting job briefings, and engaging in other "non-stressful work activities." These SERs wondered whether these times would count as rest breaks. One SER, whose workers drive between multiple work sites throughout the day, said that these workers are sitting and resting during this time in air-conditioned vehicles and are able to hydrate. The SER said these periods are physically restful in their opinion, similar to taking a break in a break room or shaded outdoor area. A SER said in written comments that the regulatory framework should include a "broad definition as to what is considered a break" for employers to "be able to handle OSHA's proposed incremental breaks." This SER also commented that the regulatory framework is not clear about how much the employer should increase the frequency of rest breaks for each incremental increase in temperature.

Water

Nearly all SERs agreed that water is an important component of protecting workers from heat injuries and illnesses and most mentioned providing water and/or other forms of hydration including electrolyte drinks or drink mixes, electrolyte popsicles, frozen treats, Gatorade, coconut water, fruit, and even pickles. One SER mentioned that they encourage workers to hydrate but not with sugary drinks. A few SERs said they have water and ice machines in the building accessible to outdoor workers, such as filtered water from refrigerators.

SERs provide water to their employees using various methods. Some SERs said they provide refillable water bottles to their staff. Another SER asked if the provision of water and refillable water bottles would suffice as compliance. However, a few of these SERs noted that refillable containers can present a hygiene issue if not cleaned properly. One SER stated that they are hesitant to provide disposable water bottles based on environmental concerns.

A few SERs mentioned that their vehicles have water coolers. One of these SERs, whose employees drive chartered passenger vehicles, was also concerned that they do not control the employee's hydration once they leave their "shop." When SERS were polled during the September 13th session on how they provide water to their employees, the 12 poll participants indicated that they are providing water in various ways: water bottles (75.0 percent), water coolers (50.0 percent), water tap (25.0 percent), water fountain (16.7 percent), and other (16.7 percent). Also, no participants selected the "I don't provide water" option.

Some SERs thought that the amount of water required in the regulatory framework is too much water. However, in written comments, a SER representing telecommunication tower erectors shared NATE's HIIPP, which specifies "adequate amount of water" to be a quantity that is

comparable to the regulatory framework's requirement (1 quart [32 fluid ounces] of drinking water per employee per hour for the entire shift). NATE's HIIPP also has a requirement for drinking water that "must always be kept cool enough to drink safely" when temperatures exceed 89° F (more discussion of requirements are in the Heat Triggers section). A SER from the construction industry stressed that requiring a specific quantity of drinking water for each worker would be burdensome:

> Considering the number of your own employees and subcontractors on a jobsite throughout the days, this requirement would be virtually impossible to keep track of each individual worker's consumption, while exposing employers to potential citations and fines through no fault of their own. I support implementing the option outlined in the SBREFA Panel materials that gives employees "ample opportunity to drink water and must be encouraged to frequently consume water or other acceptable beverages" without placing a specific hourly or daily amount of water consumed. Talking again about "reasonable care" for workers, allowing and encouraging drinking water and other replenishing beverages further ensures worker safety and removes the administrative burden that would come with recording water intake throughout the day.

In jointly submitted written comments, two SERs expressed concerns about the regulatory framework's language prioritizing water over other alternatives:

> Additionally, we disagree with the Regulatory Framework language that "[e]employers are allowed to provide other beverages (e.g., non-caffeinated electrolyte solutions) ***if they are provided in addition to minimum water requirements, not in place of***[.]" *See* OSHA Regulatory Framework at p. 6 (emphasis added). Employers large and small seem to share the common experience of employees preferring electrolyte and other safe, hydrating options over water. As was mentioned by OSHA during OSHA's New England Area Offices' August 9, 2023 roundtable discussion addressing heat illness, sometimes psychology plays a part in making these other options more likely to be consumed. The options, like freeze pops, tend to be viewed as "treats" by employees, and are often consumed right away (in part also to keep from melting). That has been our experience, as well the experience of other employers, too. Indeed, even though we provide our crews with coolers of water, they are always adding electrolyte powder to it, sometimes in less concentrated form, to make it a little less sweet. Those regularly come back empty. Accordingly, we do not think employers should be penalized for providing other, safe hydrating options in place of water, especially since these options are often healthier than water (any options that include electrolytes provide essential nutrients and minerals), and water is often part of the mixture or an ingredient of these options already.

One SER was concerned with the availability of water and water bottles and indicated that water around molten metal is a hazard. This SER noted that if water got into holding pots or remelt furnaces, "it would be a catastrophic event" because water becomes steam, expanding 1,600 times larger. In jointly submitted written comments submitted by two SERS, they elaborated that the catastrophic event could be an "explosion of the facility."

A few SERs asked the Panel to define "suitably cool" drinking water. Some SERs said that employees have different preferences on the drinking water temperature, which, in their opinion, makes it overbearing for the employer to dictate water temperature. Several SERs agreed with

the assertion that employees have different preferences of water temperature; some prefer room temperature or tap water. SERs believed that prescribing a specific temperature for water would be difficult or infeasible, depending on the work environment. During the September 13th session, SERs were asked a polling question whether they "keep water at a certain temperature or range." Of the nine participants, 77.8 percent of the poll participants answered "no," while the remaining participants answered "yes."

Many SERs also mentioned providing ice or ice packs to keep drinks cool. Another SER noted that while they provide ice to keep drinks cool, it is often melted and no longer cool by the end of the work shift. One SER did not think having ice delivered daily to large work sites was feasible.

A SER with outdoor employees asked if there would be any amount of time when having no access to water is acceptable under a heat standard; this SER gave an example where the work site runs out of water because the crew drinks more water than expected and the crew foreman drives to get more water.

Acclimatization

Many SERs objected to OSHA's option for gradual acclimatization that requires employees to gradually ramp up their exposure to heat using a prescribed schedule for maximum heat exposure. One SER thought this approach created more of a hazard than other approaches. This SER said they prefer to adjust the workload based on the individual and their ability to work in a hot environment. Several SERs said that if they force employees to work fewer hours due to acclimatization requirements, these workers might just quit and look for employment elsewhere. One SER asserted that acclimatization periods are not always effective, saying that they had seen people go through acclimatization and then suffer a heat injury or illness soon after. In written comments, a SER representing a tree care company said that gradual acclimatization is impractical because the nature of tree/line-clearance work allows for natural acclimatization through a variety of tasks and conditions; it is also technologically and financially infeasible because it would require constant monitoring and adjustment of work schedules based on shifting temperatures and hiring additional workers to account for lost productivity during the acclimatization period.

One SER representing a waterpark provided a written comment questioning the value for acclimatization:

> OSHA's scheduling proposals for "acclimatization" would be very burdensome, costly, and provide questionable value. We are already juggling lifeguard breaks, inevitable vacations, part-time scheduling, youth hour limitations etc. If a high school age student takes a week summer vacation with their family, would we have to put them on a schedule to "re-acclimate?" Virtually all of my workers take time off during the summer which could trigger the suggested re-acclimatization requirements. Accommodating this could require me to hire up to a third more employees which would be administratively difficult, if not realistically impossible in our small town and financially unsustainable.

Another SER wrote:

> It is critical to retain acclimatization flexibility. We don't follow 20/40/60/80/100. I'm not sure many small foundries do. . . . New employees at our small business spend many hours of their first day in training. Then, the remainder of Week 1 and into Week 2 new employees work with mentors in the environmental temperature but with less [workload]. The new employees are slowly acclimatized to [workload] and temperature. For us, we adjust that schedule based on employee feedback; it's not prescriptive.

One SER told the Panel that they use union labor and must pay workers for a minimum of four hours regardless of how long they work. This SER said it would raise financial difficulties if they had to acclimatize workers using gradual acclimatization schedule in the regulatory framework. In written comments, a SER expressed concerns that the cost of acclimatization is further "compounded if the employer is required to pay for the time away from heat and the [new hire] decides to quit within the first couple of weeks or that it does not work out. Especially for a smaller employer this can be impactful."

A few SERs shared that they currently practice gradual acclimatization. One SER in the die casting industry noted that they currently give employees approximately two weeks to acclimate to heat and wondered if that was sufficient. Another SER with a rotational workforce that works 14 days on the job followed by 14 days off, acclimatizes workers by placing them on night shift for the first 7 days of an on-period, followed by 7 days on day shift. NATE's HIIPP, shared by a SER mentioned in the Heat Triggers and Water sections above, contains instructions on how to gradually acclimatize employees.

During four sessions (September 7th, 12th, 13th, and 14th), SERs were asked three polling questions about the acclimatization of employees (see questions 16 through 18 in Appendix D for detailed poll results). When asked, "Do you provide heat acclimatization for new and returning workers?", of the 58 SERs that responded in all sessions, 44.8 percent selected "neither," indicating that they did not provide acclimatization for new or returning workers. About one-third (32.8 percent) answered "yes, for both new and returning workers" and more than one-fifth (22.4 percent) responded "only for new." When polled during these four sessions about the types of protections currently in place for acclimatized workers, the 54 responders shared that they are utilizing a variety of controls: heat hazard awareness training (68.5 percent), increased monitoring and communication (66.7 percent), gradual exposure to heat (27.8 percent), and other (14.8 percent). SERs were also asked at three of these sessions, "Do you have any acclimatization protocols/plans/schedules for sudden increases in temperature and/or heat waves?" Three-fifths (60.0 percent) of the 25 responders selected "yes," while the remaining two-fifths (40.0 percent) chose "no."

A few SERs said it would be impossible to move workers to a different job or job site where they could perform other tasks during the acclimatization period. SERs did not believe they had enough "light duty" tasks (e.g., sales, phone calls, washing trucks) to keep employees fully employed.

A SER stated that they have an annual summer shutdown for nine days surrounding Independence Day and expressed concern that requiring a strict acclimatization schedule would threaten their ability to offer this time off to employees. Another SER, with a workforce that travels across the country, said that strict acclimatization would be difficult to implement.

Many SERs said they do not have any formal acclimatization protocol or specific acclimatization procedures for new workers. Some SERs said that employees are from and live in the same area where they work and are accustomed to the climate. Some also reported that many new employees are coming from doing similar work and therefore do not require acclimatization. For example, a SER with outdoor work settings said that most of their employees are already acclimatized to hot temperatures due to previous work experience in the heat (e.g., construction industry, landscaping). This SER added that given the nature of their work, people who feel they cannot "take the heat" will "self-select" out of the job anyway.

Although one SER said that they avoid hiring new employees during the hottest time of year because they find it too difficult and costly to onboard them during that time, several other SERs mentioned that as part of the hiring process, they are already assessing the new hires' ability to work in the heat based on the region or previous jobs they are coming from. One SER said that if a new employee's previous work history does not indicate exposure to similar heat conditions, tailored measures are implemented to help new hires acclimate. One SER with outdoor work settings mentioned their own experience as a new hire when they had come from a more physically intense job that involved work in lower heat; their acclimatization was to be in and out of an air-conditioned vehicle. Other SERs also mentioned adjusting for new hires such as gradual exposure to the outdoors, increased monitoring, more frequent breaks, and lunch breaks in climate-controlled buildings. A SER in the agriculture industry said that they ask seasonal employees (paid hourly) if they are acclimated to the weather and address appropriately, adding that acclimatization is generally not an issue because these workers usually arrive from similar work or somewhere hotter. One SER that utilizes temporary employees to supplement their labor said that these temporary workers are already acclimatized and expressed concern that the more stringent acclimatization schedule would add to labor shortage issues.

Several SERs stated that the onboarding and initial training period also serves as an acclimatization process for new hires. One SER said that the first week of new-hire training includes two days of working in the training yard with a combination of inside/outside work. Two SERs with indoor settings said that while they do not have a formal acclimatization plan, their new hire training cycle allows for a natural acclimatization process as it takes a month or more until someone is on the floor working at full capacity. A SER with outdoor employees shared that all their new hires must have four hours of safety training and spend the rest of the first week observing while being monitored by coworkers. This SER stated that new employees are not allowed to perform any manual labor other than low exertion tasks, such as retrieving tools and materials.

SERs frequently reported that safety managers or foremen monitor how the new hires are doing. One SER reported that they have heat hazard awareness training and a buddy system, stressing the importance of overseeing new hires to ensure they are handling the heat well. One SER reported that during the first few weeks of employment, their new hires work alongside senior employees with days varying in length which allows both acclimatization and monitoring of new employees. In written comments, citing the regulatory framework's option for acclimatizing returning employees with increased monitoring and communication by a supervisor or designee, a SER said that any proposed standard should "expressly permit" that "the crew foreman—who is not management—may be responsible for monitoring, awareness training, and communication."

Most SERs who discussed acclimatization of returning workers reported not having acclimatization procedures for returning workers, and several SERs said that acclimatizing returning and short-service employees would be difficult. One SER thought that returning workers would see no benefit in reduced work for acclimatization; for example, the SER said they would be acclimatized after doing outdoor leisure activities in the heat during their time off. One SER mentioned that they have a buddy accompanying a returning worker; if they notice this worker is not feeling well in the heat, they will scale down the work. Another SER also mentioned that their returning employees are not re-acclimatized when they return from vacation, but the SER said they would like to see some guidance on the issue. One SER in written comments suggested that seven days away from work is "too short of a time" to then re-acclimatize workers and 30-days would be more "reasonable."

One SER asked whether acclimatization is one of the factors OSHA has identified as a major cause of heat-related injury or death.

Some SERs would like a special emphasis program on workers' acclimatization and supervisors' training. The SERs expressed concerns about the acclimatization rules because there is a 30° F difference between the morning and midday heat index on some days.

In addition, some SERs had concerns about the starting temperature for acclimatization. One SER had concerns about the definition of a "heat wave" and how it relates to acclimatization. One SER suggested the acclimatization period should be variable according to geography.

In jointly submitted written comments, two SERs suggested more flexibility for the second acclimatization option that involves an employer-developed protocol based on multiple factors:

> [W]e do not think the standard should set a minimum protocol for this option. A non-mandatory appendix may be helpful, but ultimately, it should be left for the employer to decide. Additionally, we do not necessarily think that all of the factors listed in the option (i.e., "work tasks performed by employees, clothing/personal protective equipment (PPE) worn, and environmental risk factors") need to be considered. The option should be reworded to state: ". . . work tasks performed by employees, clothing/personal protective equipment (PPE) worn, and environmental risk factors, and/or any other relevant

factors." This will help add the type of flexibility employers need with respect to their acclimatization protocols, should they choose this option.

Engineering Controls

Most SERs with indoor settings reported using some form of ventilation and air movement to cool their facilities, such as fans, air exchanges, and "Portacools." Many of these SERs said it would be infeasible to lower the temperature using air-conditioning because their buildings were too large to do this effectively. One SER mentioned that they are limited in their placement options for fans in an indoor environment due to chemical cross-contamination concerns and interference with scale calibration. Another SER expressed a similar concern stating that they could not use fans in their facility where employees are welding, as the fans blow fumes toward the employees. One SER mentioned that they run ceiling fans in the morning to pull in cool air and then shut the doors by mid-morning to reduce exposure to radiant heat from the asphalt surrounding the facility. Another SER said that they bolt fans to the ground to avoid theft, preventing the movement of fans to optimize ventilation. In a written comment, a SER said that while placing large fans, they needed to ensure that employees are still able to "move around their various sized work pieces" and that "this is where one engineering control can disrupt or negatively impact another engineering control."

Some SERs reported that they have employees that are exposed to process heat. SERs were polled on September 12th on whether they had workers that are "exposed to process heat or heat generated by equipment as part of their typical work duties." Of the 14 SERs that responded, 57.1 percent answered "no," and the remaining 42.9 percent answered "yes." One SER discussed the multiple areas of their facility where heat is generated and the ways that they have attempted to mitigate heat in those areas, which includes using an overhead local exhaust to pipe heat directly outside, cooling stations for hot plastic in a cooled water table, and a pit area to isolate its hot grinder and reduce workers' exposure to heat.

A SER in the manufacturing industry said they have air make-up systems for good airflow, especially in the most insulated areas. This SER said that the machines at their workplace generate minimal heat. Some indoor areas could be hot due to insulation from concrete buildings; however, these are not regular work areas, according to this SER. SERs employing kitchen staff all said that indoor work areas are climate-controlled; one of these SERs did however say that kitchen temperatures can exceed 100° F.

SERs with indoor settings provided additional examples of how certain engineering controls are not applicable to their workplace. For example, some SERs said they liked the idea of engineering controls like misting fans and shelters but were worried those would not work in their workplaces. One SER said that misting machines could not be used on a construction site because it was difficult to have hoses running across the ground in those areas. A few SERs said that misting machines could not be used in their setting because they introduce a slip hazard, damage equipment, interfere with scale calibration, and warp lumber. Another SER mentioned

that indoor construction sites are not standardized and therefore the use of engineering controls is variable.

A SER from the manufacturing industry stated that the Department of Energy recommends setting air-conditioning at 78° F for occupied spaces and stated that they did not believe they could feasibly provide air-conditioning to their entire foundry. This SER also said that their calculation suggests that the amount of air-conditioning tonnage needed to keep temperatures below the heat triggers in the regulatory framework would not be feasible for them.

A SER in the restaurant industry submitted a written comment detailing a potential issue with the installation of engineering controls:

> Many restaurants, particularly those in urban or leased spaces, cannot make significant alterations to their physical layouts. This often makes it impractical to create indoor cool-down areas, as space is already optimized for essential functions such as food preparation and customer dining.

SERs with outdoor settings reported using engineering controls such as natural shade (e.g., trees and dense vegetation), pop-up canopies, umbrellas, and portable shades. Many SERs with outdoor work settings also reported having air-conditioned vehicles on site that workers can use to cool down. One SER in the construction industry also reported using misters and swamp coolers both on the ground and on the roof. Some SERs with outdoor settings said they believed some engineering controls were infeasible for their workplace. One SER in heavy construction said that they would have a project or job site that is 15–20 miles long and that they are not going to "have tents set up every quarter mile."

When SERs were polled at two sessions, September 12th, and 13th, on the types of engineering controls that are used "to mitigate the impact of heat exposure to employees that work outdoors," two-thirds (66.7 percent) of the 30 responders reported using an "air-conditioned space." Poll participants also reported using natural shade (60.0 percent), artificial shade (57.7 percent), cooling or misting fans (50.0 percent), other (26.7 percent), and none (3.3 percent).

A few SERs indicated that their facilities or onsite vehicles do not have air-conditioning. They were concerned that they would need to retrofit their facilities to comply with a proposed heat standard. In jointly submitted written comments about the infeasibility of mechanical ventilation near machines that melt metal, two SERs stated that employers "who have attempted to install ventilation systems, including air conditioning, report that not only is the investment ineffective, but resulted in the increased use of energy and emissions." One SER estimated that retrofitting their facility would cost between $50,000 and $100,000. Another SER reported that they spent $100,000 in one plant and $200,000 in another plant to install a whole building ventilation system to allow for more air exchanges. This SER said that employees noticed it made the facility cooler, but it was very expensive. Another SER estimated that they would need to spend $1,500–$3,000 per farm truck/vehicle to upgrade their air-conditioning. In jointly submitted

written comments, two SERs discussed the technological infeasibility of installing air-conditioning in facilities:

> Some industries would be even more significantly impacted than others. For example, flour milling operations in the Southern states include many older operations that have been expanded over the decades to include interconnected structures that are separated by brick-and-mortar walls over six inches thick, making air conditioning installation infeasible due to structural integrity issues caused by boring holes for ductwork, as well as issues associated with balancing air to ensure air is evenly distributed throughout the entire workplace. Even if possible, the likelihood that installations of these systems could cause substantial damage to the structure is high. Also, there is a real possibility that subsequent malfunctioning of these "square hole in a round peg" systems could result in mold, rot, or other forms of structural damage. The idea of harmonizing newly installed air conditioning systems in large, interconnected structures, given all these challenges and variables, is simply not doable in many industries, […] particularly those […] where older and larger buildings are used.

In jointly submitted written comments, two SERs in the construction industry said that a heat standard should recognize fans "as an effective substitute for air-conditioning, particularly in or around vehicles such as tractors and forklifts, and where fan ventilation reduces heat below thresholds of concern." They believe, "fans as a substitute for air conditioning makes sense not only from a risk standpoint—air flow is an effective mechanism to cool body temperature—but is an important consideration that should be made in light of climate change concerns regarding the burden on the climate from air conditioning use."

One SER in the construction industry asked in written comments that OSHA clarify the phrase "as close as practical to the work area," saying that that the best method of compliance and the locations of controls (e.g., shaded rest areas) can vary depending on the stage and task of a project.

Two SERs in the construction industry raised concerns in jointly submitted written comments that the regulatory framework is unclear about how employers are expected to demonstrate the effectiveness of controls and concerns that might arise from that confusion:

> Additionally, while we like the open-endedness of allowing outdoor worksites to use "[c]ooling measures (e.g., cooling fans/misting machines), if employer can demonstrate that they are at least as protective as shade[,]" we are not sure how we would go about demonstrating that such measures are at least protective as shade, and to the extent that that would require engineering or legal expertise, small businesses are in no position to readily afford those. See OSHA Regulatory Framework at p. 5. In these and similar circumstances, it will be difficult to tell what would be considered sufficient action by an employer, especially if a heat illness were to occur. In retrospect, it may always look like preventive/mitigative actions were insufficient, so clear compliance lines would be useful.

One SER said that the regulatory framework is unclear on whether OSHA intends that air-conditioned vehicles can be used as cool-down areas only when temperatures are regularly above the high-heat trigger or if employees spend most of their time in the car. For example, this SER

asked if the framework would prohibit the use of air-conditioned vehicles as cool-down areas when temperatures meet the initial heat trigger. This SER said that such restrictions on the use of air-conditioned vehicles would present them with "significant issues" because their employees regularly take breaks in their air-conditioned trucks.

Several SERs said that some of their employees prefer shade instead of air-conditioning. For example, one SER with outdoor employees said that some staff do not like to go into air-conditioned spaces because then it is "harder to get back out" and instead prefer sitting in the shade while taking their break.

A SER discussed the applicability of the hierarchy of controls and said that necessary engineering controls depend on the hazard. This SER said that, as employers, they need to consider eliminating a hazard and suggested that starting work earlier could help. A few SERs mentioned that they utilize machines to lessen manpower on hot days. For example, a SER representing a tree care company mentioned that they utilize cranes to use less manpower when temperatures are high. One SER said that they use robots to do tasks in hazardous spaces including those that are confined spaces, that are hot or are otherwise dangerous for people.

Personal Protective Equipment

Several SERs were concerned that a heat standard could jeopardize worker safety, saying that that their employees wear personal protective equipment (PPE) that could contribute to heat stress. A SER in the die casting industry noted that the nature of their work requires employees to wear PPE (e.g., pants, boots, extensive face shields) that may contribute to heat stress. A SER representing a fire department said in written comments that the National Fire Protection Association (NFPA) requires PPE during emergency incidents. This SER also said fire personnel are required to wear the appropriate PPE during training exercises as well and "are subject to the same critical temperatures [during training] as during emergency operations." In a written comment, another SER provided examples of PPE that is used for safety and hygiene in the restaurant industry that may also contribute to heat exposure, such as "certain clothing items, like chef coats and head coverings."

During the September 18th session, SERs were polled on their PPE use and heat exposure mitigation in relation to PPE. First, the SERs were asked, "What types of personal protective equipment (PPE) or clothing do your employees wear?" Respondents were able to select multiple answer choices. The responses from the 14 SERs indicate a wide range of PPE use: boots (85.7 percent), gloves (85.7 percent), other (71.4 percent), face shields (50.0 percent), coveralls (42.9 percent), respirators (35.7 percent), waterproof aprons (14.3 percent), and surgical gowns (7.1 percent). One of the responders indicated that they did not use PPE. When SERs who reported employee PPE use were further polled on whether they "have procedures in place to attempt to mitigate heat exposure for those employees," nearly all (92.3 percent) of the 13 responders answered "yes," while the remaining responder did not.

Some SERs reported using cooling devices, such as neck gaiters, long-sleeved clothing, cotton t-shirts, vented or shaded hard hats, long pants, air-supplied helmets with vortex coolers, cooling bandanas, and light brimmed hats. During the September 18th call, SERs were polled on whether "employees wear any cooling personal protective equipment (e.g., cooling vests, wetted garments)" and 57.1 percent responded "no" and the remaining 42.9 percent answered "yes." Another SER reported that their employees use wet towels around the neck as cooling devices. In a written comment, one SER from the utilities industry said that cooling towels were made available to employees and that in hot weather, face shields and N95 respirators are used in lieu of particulate respirators.

Some SERs shared that they tried to adopt cooling PPE but that employees did not find them useful. One SER tried neck coolers, but said oil would get on the neck coolers, making it unhygienic. A few SERs reported that they tried cooling vests, but staff did not like them. Employees preferred air flow, which the vests prevented. One SER from a foundry found that employees initially loved cooling vests, but after the vests warmed up and weren't cooling anymore, the employees "couldn't take them off fast enough." This SER elaborated on the challenges of cooling vests in written comments, saying that they found that "the cooling effect on the ones we tried didn't last long enough to warrant their usage due to the vest quickly warming up from nearby radiant heat" and that employees attempted to remove the vests within 30 minutes because "they became warmer than ambient air." This SER also stated that their "foundry's uniform (PPE) company strongly disagrees with the idea of using 'zoned design' PPE" because "the zoned uniforms" could potentially put their employees "at more risk, given the circumstances in a foundry."

Two SERs in the construction industry said in jointly submitted written comments that "cooling PPE, such as cooling vests, and other cooling equipment, like cooling towels," can create greater hazards. They "become even heavier because they get wet/soggy," which makes it very difficult for employees to climb up and down ladders; they are also difficult to wear with other PPE, such as fall protection, and might even interfere with essential PPE components, according to these SERs.

A few SERs requested that, if OSHA were to require employers to provide cooling PPE, OSHA provide evidence of effectiveness of cooling PPE (e.g., cooling vests). A SER suggested in written comments that OSHA list cooling mechanisms (PPE, engineering controls) as options to allow the employer to work with the employees to figure out what works best for them on a "case-by-case basis."

Supervision/Observation

SERs shared that they already use different methods for monitoring employees for signs and symptoms of heat-related injuries, including: buddy systems, supervisor/designee observation, cloud-based tracking systems, and employee self-monitoring. During the September 14th session,

the Panel polled the SERs on what current policies and procedures they have for "identifying signs and symptoms of heat-related illness and injury among employees." Of the 14 SER responders, more than two-fifths (42.9 percent) indicated that they use supervision/observation by supervisor or other designated person, and more than one-third (35.7 percent) utilize an employee buddy system. Also, more than one-fifth (21.4 percent) noted that they do not have current policies and procedures. While "other" was offered as a choice, no SERs chose this option.

Several SERs with indoor settings reported using buddy systems where coworkers monitor each other for symptoms of heat-related injuries and illnesses. Two of these SERs indicated that their program was specifically for new employees. Some SERs in manufacturing said they have implemented monitoring of employees for signs and symptoms of heat-related illnesses by lead workers; one SER mentioned a focus on areas with the highest heat exposure. Several SERs with outdoor employees also mentioned that they have a buddy system where people are together and can look out for signs and symptoms of heat-related illness. A SER mentioned that the "captain" onsite is empowered to observe the workers, adding that sometimes a worker could be designated as a supervisor on the work site.

One SER shared in written comments that their supervision/observation has "helped with reducing heat illness issues in their plant" and provided their best practices for supervising employees for signs of heat-related injuries and illnesses. This SER stated that supervisors, managers, and leads check on the employees throughout the day at their workstation and as they hand out popsicles. They also ensure the "ability for employees to communicate directly via phone to a lead, supervisor, or managers if they are having issues or notice another employee having issues." The SER added that:

> [I]f you have 25 or 30 people in a small area, then 1 designee or supervisor should be able to observe them. If you have the same 25 or 30 spread out over a large area or multiple locations, then you may need several more to observe on a more continuous basis.

One SER expressed concern that the increased burden from the rule may result in reallocating resources away from their buddy system, which they have found to be successful. A few SERs expressed feasibility concerns with a potential supervision requirement for small work sites, such as those with 1–2 employees. A SER said that although they do have managers checking in on employees, it is hard for them to be near the employees all day given the large size of their property.

Some SERs with mobile workers mentioned a few methods of monitoring or observing their employees. One SER said that they use a cloud-based tracking system to implement routine call-ins. Another SER reported that they have employees working alone at some work sites; the company has "lone-wolf monitors" that will trigger an alarm if the employee does not move for a long period of time. The provision for constant monitoring of employees was a concern to this

SER. One SER stated that when they dispatch a trucker, there might be a heat hazard in one location but not in the others and it would be difficult to monitor employees in these situations.

A SER expressed concern about having to contact and interrupt mobile employees while driving and said that the employees are very busy (making up to 20 stops per day) and do not have time to respond to notifications (this SER said they have 28 employees servicing about 350 properties a day). Another SER with employees at scattered job sites noted that they often experience limited cell phone service, requiring them to rely on employees to use their best judgment. A SER with employees that drive chartered passenger vehicles said they have no control over the destination where clients take their employees. That SER said that at the "shop," employees are in a climate-controlled environment, but when they leave the "shop," the controls available to employees to reduce heat exposure would vary depending on the destination determined by the client.

A SER presented their administrative cost estimates from monitoring job sites that are spread across multiple regions. This SER said that their employees' daily work covers a 120-mile range, and temperatures can change by 5–10° F daily within that area. This SER estimated that at a threshold of an ambient temperature of 95° F, the administrative costs would be $9,600 a year and at a threshold of an ambient temperature of 88° F, those administrative costs would be $38,000 a year. The SER clarified that these costs include recordkeeping, daily monitoring, and breaks. The SER said they would incur costs for monitoring temperatures and checking in on the employees (because their employees work individually, they would not be able to implement a buddy system).

Another SER provided a written comment stating that they utilize the buddy system and outdoor work site visits from supervisors and safety managers to monitor for heat-related symptoms throughout the day. This SER wrote that communication is typically through phone conversations and face-to-face visits and that on high heat index days, the frequency of contact is increased.

In jointly submitted written comments, two SERs suggested some additional options for supervision/observation, such as self-monitoring of urine color and monitoring of heart rate and core body temperature. They also suggested that "individual-level biomonitoring with wearable technologies may be an option in some occupational settings, assuming appropriate training is provided to those doing the monitoring and with access to the data." They were also concerned that the regulatory framework is too vague on supervision/observation:

> There are many signs and symptoms of heat illness. Do they have to be observed for a set amount of time? Is one minute enough? Sweating is a sign/symptom of heat illness. How much sweat must be observed before it rises to the level of warranting attention?

Other Administrative Controls

SERs had mixed opinions on adjusting work schedules to reduce worker exposure to heat.

Some SERs said they are unable to adjust work schedules or that their employees prefer not to do so regardless of the temperature. One SER said that while sometimes they do shift start and end times due to weather, this can sometimes lead to more dangerous conditions and may not benefit workers. Two SERs in the construction industry agreed, saying in their jointly submitted written comments that earlier times can be darker and damper, exposing their employees to slip/trip/fall hazards. They added while some larger general contractors can afford extra lighting to reduce such hazards, others simply cannot. A SER representing a golf course said that they cannot start work early due to restrictions that do not permit work outside certain hours in residential areas. A SER representing a tree care company and a SER in the construction industry shared similar concerns in separate written comments that noise ordinances and homeowner associations' policies prevent their crews from working early or late in residential neighborhoods. One of these SERs further said that "[OSHA] must provide clear language on which standard takes precedent if an employer can establish a need to work during prohibited hours, as well as a clear definition of what that need is." Another SER said that although they encourage their employees to adjust their work schedule to work when it's cooler in the day, some employees choose not to—they would want to work during normal hours for personal reasons and family needs. A SER from the construction industry opined that adjusting work schedules may not always be feasible because of the nature of their work and the increase in housing demand which makes their timelines less flexible.

Other SERs reported that they changed their work times to avoid work during the hottest parts of the day. One SER with outdoor employees said that they use a heat index of 90° F to push employees to "take it easy" and to trigger modified work tasks or daily schedules, such as completing most work by 11 a.m. and then doing lighter tasks until 2:30 p.m. Another SER noted that during the summer, they usually work out of the "big heat," starting at 6 a.m. and ending at 2:00 p.m. Another SER also noted that they offer overtime during morning hours, allowing workers to leave earlier on hot days.

Some SERs mentioned rotating workers to different tasks or jobs throughout the day to reduce the impact of heat on employees. A few SERs with outdoor employees also said that workers do heavier work in the morning and lighter work in the afternoon when temperatures are high. Another SER with outdoor employees mentioned that to stop work in "super high heat," they would move the "tailgate meeting" to the afternoon rather than having it in the morning and hold the meeting indoors. Another SER also mentioned that there had been times when they moved outdoor employees and their work to an air-conditioned area indoors.

SERs mentioned various methods they use to notify workers of important information including reminders and warnings about high heat dangers. Those methods include text messages, phone trees, mass alert systems, email blasts, in-person direct communication (face-to-face) and phone apps. One SER shared that one worker is tasked to monitor the temperature (via the OSHA-NIOSH Heat Safety Tool App) and to send email notifications. This SER said that it may take

less than two minutes to send the email. A SER in the agriculture industry mentioned that they do not communicate by email with their seasonal workers.

Many SERs also told the Panel that they do daily or weekly toolbox talks or "tailgate meetings" that frequently focus on heat-related issues during times of high heat. Most of these SERs characterized these meetings as training. Some SERs said that when temperatures start to rise (e.g., starting in spring), meeting topics would include emphasizing hydration and reminding employees of the engineering controls available for use (e.g., pop-up canopies). One SER said that when temperatures are consistently above 90° F, they talk about heat (e.g., what to do if a heat-related illness occurs) and hold a detailed meeting every month on heat-related illness, symptoms, and emergency response. A SER representing a tree care company said they follow the Tree Care Industry Association's (TCIA's) tailgate safety program. In written comments, one SER shared their challenges with using pre-shift meetings on heat-related topics, citing pre-shift overtime hours that scatter employees throughout the plant. This SER did note that their maintenance staff is able to hold pre-shift meetings where heat-related topics can be discussed.

Other SERs said they sent out text messages reminding supervisors and/or employees of high heat procedures (e.g., increased hydration, break guidance) when temperatures are high. Another SER stated that they use televisions in their breakroom to communicate safety topics to their staff, including information about heat-related injuries and illnesses.

Heat Injury and Illness Prevention Programs (HIIPPs)

SERs reported a mix of informal and formal heat injury and illness prevention programs (HIIPPs). Some said that they do not have a program that is in written form; while others said they have a written program that is relatively short in length (i.e., in bullet points) or not as extensive as what is described in the regulatory framework. A SER with outdoor employees said that they currently have a safety policy but "not a heat preventative program for illness and injury." Some SERs said that they have decided to develop a formal written plan because of their involvement in the SBREFA process; for example, one SER mentioned that reading the SER Background Document and participating in the SBREFA process motivated them to write down their program. Another SER described how they will update their current plan to adjust for recent historic heat indexes. A SER in the restaurant industry said they currently have a heat plan that's mostly for employees that are exposed to heat in the kitchens where temperatures can reach 100° F. This SER said that they want to "formulate a really good plan" for employees exposed to outdoor heat as well, such as those that are exposed to heat while working on outdoor patios or in the parking lot.

Two SERs in states with existing heat standards noted that they created a written plan to comply with those standards. One SER shared that they did not receive compliance assistance from their state agency and needed to hire a Human Resources consulting group to develop a written plan. That SER suggested that OSHA provide compliance assistance with developing written plans if a

heat standard is finalized. The other SER said they would be happy to share their "fully formatted" and "vetted" HIIPP with the other SERs needing a template.

A SER told the Panel that they believe a written plan could be beneficial and employers should have flexibility to develop and implement such plans; other SERs agreed that a plan could be beneficial. Another SER submitted written comments noting that their HIIPP reduced the number of first-aid and more serious safety incidents, reduced workers' compensation costs, and maybe improved absenteeism.

The Panel polled SERs during the September 18th session, asking, "How often do you think that a Heat Injury and Illness Prevention Program (HIIPP) needs to be reviewed and updated?" Respondents were allowed to select multiple answer choices. Four-fifths (80.0 percent) of the 15 respondents answered "annually" and two-thirds (66.7 percent) selected "whenever a heat-related injury occurs." Respondents also selected: every three years (13.3%), every 6 months (6.7%), every two years (6.7%), and other (6.7%).

A SER commented that they believed some of the options for the frequency of reviewing and updating HIIPPs are worded too vaguely. For example, the SER thought that the first option to review and update "whenever necessary to ensure ongoing effectiveness" and the second and fourth options, which involve reviewing and updating "whenever a heat-related illness or injury occurs," were unclear. This SER asked how these options would apply to their workplace where there has never been a heat-related illness or injury and how severe an illness or injury must be for an update and review to be required under these options. This SER felt that the third option to "annually" review and update the HIIPP is the best option, as employers could update and review the plan and conduct worker training once a year when the weather starts to warm up. In jointly submitted written comments, two SERs were also against any vague requirement that programs be reviewed to "ensure ongoing effectiveness" because "it would be an unfair use of hindsight for OSHA to cite an employer for not reviewing its program 'whenever necessary to ensure its ongoing effectiveness' after an accident." They also commented, however, that while an annual review would likely be "the easiest option to implement from an administrative standpoint," it will still be burdensome for employers without adequate resources. They also questioned whether any periodic review is necessary because they "do not expect that there will be substantial changes in heat hazards from year to year."

Worker Training

Almost all SERs agreed that training is one of the most important steps an employer can take to prevent heat injury and illness in their workers. Several SERs felt that a heat standard should be centered around training; one SER thought that a heat standard should mandate training while questioning the necessity and usefulness of other potential requirements. Nearly all SERs mentioned that they already provide some form of training on heat injury and illness prevention including recognition of signs and symptoms and how to respond. Other topics that SERs said they provide training on include: importance of staying hydrated (electrolytes or water); working

at a comfortable pace; contacting a supervisor to get an extra break or water; accessing and locations of cool down areas; avoiding caffeine and sugary foods; sleeping well and being well rested; acclimatizing; and medical treatment of heat-related illnesses and injury. Some SERs covered prevention topics such as "…awareness of personal choices made outside of work that may affect how the body reacts to heat stress while working…"

Methods of training currently used by the SERs include: videos, pamphlets, charts, information on message boards, emergency information on water canteens, multimedia posters, and comprehension tests. One SER in the agriculture industry mentioned their training includes role play and practicing heat-related injury and illness prevention. One SER put a chart in the restroom area that shows different colors of urine as an indicator of dehydration. Another SER gives cards to drivers, so that they know how to check their urine. Another SER has color-coded level cues (green, orange, red) for daily weather events. A SER shared that the signs of heat-related illness or injury can appear like drug withdrawal and that therefore it is important to train their staff on signs and symptoms so that appropriate treatment is provided. In a written comment, one agricultural SER noted that video training may not be workable for many employers in rural areas where access to the internet can be limited.

SERs were polled on the frequency of heat training during the September 18th session, the Panel asked, "How often do you conduct heat safety trainings with employees?" Respondents were able to select multiple answer choices. Most of the 15 SER responders indicated that they are conducting trainings annually (86.7 percent), before heat season (86.7 percent), and upon hiring (80.0 percent). Some responders also selected the options for after a heat-related incident occurs (20.0 percent) and other (20.0 percent). One of the responders who selected "other" further clarified their answer by stating that they sometimes cover heat as a topic during their monthly safety trainings and during their "safety minute of the day," noting that they address heat "on a daily basis depending on the situation at hand." None of the responders selected the option indicating that they "never" conduct heat safety training.

SERs' feedback varied on whether they provided formal or informal training. A few SERs noted that they offer annual heat prevention training with training sessions ranging from 15 minutes to one hour. One SER told the Panel that they provide monthly refresher trainings that last 15 minutes. Another SER, in written comments, stated that heat training becomes a focus when summer approaches and training lasts for 30 minutes. This SER also stated that training is not provided in other languages, only English.

Another SER, from the agriculture industry, submitted a written comment suggesting that OSHA continue to provide resources for training and guidance, such as templates for employers to create their own HIIPP, which could include training. This SER also stated that heat injury and illness prevention training is beneficial as they have not had a heat injury or illness in over 50 years due to their training program. The SER's training program is provided annually for full-time employees and at the beginning of each season for seasonal employees. The SER also

mentioned that training is provided in languages best comprehended by employees and step-by-step scenarios are discussed to prepare employees for emergencies.

When temperatures are high, some SERs with outdoor employees mentioned that they do additional training or retraining on topics such as heat illness prevention, signs and symptoms of heat illness (so that workers can monitor themselves and each other), ways of cooling down, and emergency response procedures. Many SERs characterize toolbox talks or "tailgate meetings" as a method of training; more discussion of these meetings are in the Other Administrative Controls section above. One SER in the transportation industry said their safety briefings include review of various safety hazards, medical protocols, and the location of the local hospital or clinic that they can get help from.

One SER mentioned that they liked the idea of having separate training for supervisors and general employees.

A few SERs said that some types of existing training (e.g., first aid, CPR, OSHA 10, and OSHA 30, lifeguard training) include materials and discussion related to prevention and treatment of heat-related injuries and illnesses. For example, a SER representing a water park said that half their seasonal staff are lifeguards (or lifeguard-certified), who are already trained on heat issues from the American Red Cross Lifeguard & Water Safety Training they receive to be certified as lifeguards.

In written comments, a SER asked if OSHA were to require the employer to "train employees to provide first aid to treat signs of heat illness, whether those employees will have to be included in a bloodborne pathogens programs as well," saying that this will "place a significant regulatory burden on employers."

Another SER stressed that their trade association has invested a lot of funding in training and expected possible additional funding in the future due to an increased focus on heat.

Multi-Employer Work Sites

Several SERs shared their experiences with safety standard compliance on multi-employer work sites.

Among SERs that are subcontractors, a few noted that in their experience they have to follow the safety rules set by the general contractor, while others noted that they were able to use their own policies. A few SERs said that variation in rules across companies makes it difficult to comply with health and safety requirements. A few SERs said that companies they perform work for have stringent requirements for subcontractors; some require them to use third-party compliance companies to evaluate their safety policies. One of these SERs also said that although they would generally fall under the general contractors' policies, they might add their own policy if theirs is more stringent and keeps their employees safer. This SER also mentioned that in some cases, their version of the job safety analysis (JSA) is more thorough and protective of employees than the one required by the general contractor, so they would perform both versions. A SER

representing a tree care company said they "do extensive work with utility companies" and expressed concerns in written comments about the regulatory framework's requirements on the host employer's responsibilities in multi-employer work sites. This SER said that "utilities are going to dictate the heat policies of contractors who work outdoors every day" and that "this could pose issues where their crew would be responsible for heat monitoring and data collection but would be held to the break and acclimatization requirement of the utility."

A SER that is a general contractor reported that they meet with their subcontractors weekly to discuss safety issues. This SER said they require subcontractors to follow their HIIPP when temperatures exceed a trigger level because they find that most subcontractors' safety plans do not or inadequately address heat. Another SER stated that they trust their subcontractors as professionals and "don't typically tell subs how to do their job." A few SERs asked the Panel for clarification on the role of the general contractor on multi-employer work sites. One of these SERs said they have employees who do onsite work at multiple client locations, up to 26 per day, in a variety of work environments (e.g., foundries, quarries, apartment complexes). The SER said that they do not have any control over the client work site (e.g., any heat-related controls in place) and must trust that the client is providing an OSHA-compliant work site. A SER asked the Panel for clarification on whether general contractors would be responsible for providing water to the subcontractors' employees. In written comments, this SER recommended that "the standard include explicit language saying an employer—not the general contractor—is directly responsible for providing water to their own employees."

A SER shared a concern with the Panel about the level of communication between general contractors and subcontractors and potential IRS implications. The SER stated that to avoid tax penalties, they need to balance ensuring that the subcontractor is being safe without dictating how they work. Another SER questioned whether general contractors would be required to inspect the subcontractor's training, stating that they could be held responsible if the subcontractor receives an OSHA violation.

Medical Treatment and Heat-Related Emergency Response

A SER said they believe OSHA already requires employers to have someone with first aid training, either on-site or in close proximity. The SER believed this would include first aid training for heat stress. A SER in written comments emphasized the importance of quickly responding to heat illness and "being proactive in preventing heat cramps and heat exhaustion."

Another SER said in written comments that First Aid and CPR trainings are the emergency response procedures currently in place and that these plans would need to be updated to address heat injuries and illnesses. The SER stated the following procedures for addressing signs of heat injury or illnesses symptoms:

> Heat stroke call 911. Heat exhaustion notify supervisor, remove unnecessary clothing, cool the worker by having them wash face and neck with cold water, encourage frequent sips of water, and if symptoms do not improve take worker to clinic for evaluation. Heat cramps notify supervisor, have worker rest in shady and cool area, give them water and

> electrolytes, seek medical attention if symptoms worsen. Refer to the OSHA/NIOSH APP if you can't remember what to do and notify supervisor.

A couple of SERs shared that while creating emergency response procedures, they consider that some employees do not know the address of where they are working, particularly in rural areas, locations without a physical structure, farmlands, or parts of golf courses (e.g., 18th hole), which do not have addresses. They suggested that OSHA provide more guidance to highlight this issue for employers. In these cases, one SER noted that they provide information about the closest crossroads at each work site.

A few SERs mentioned providing ice packs for first-aid use. Some SERs stated having 15 pounds of ice available onsite for medical treatment and heat-related emergency response would be infeasible for them. One SER representing a heavy construction company said that they would have a project or job site that is 15–20 miles long and was concerned about having to spend more time to "load up 15 pounds of ice every day for all parts of the project" which will "melt in 105° F weather." Another SER thought that it would be more practicable to have ice packs and train workers for the placement of ice packs on the body.

Time and Equipment Estimates

Several SERs disagreed with specific time and equipment estimates that were provided in the SER Background Document. One SER estimated that the time estimate for creating a company-wide HIIPP and disseminating the information would take 112 hours. Another SER said that OSHA's estimate of the number of vehicles that can be used for air-conditioned breaks (two employees per vehicle) was inconsistent with their experience of using large passenger vans to transport workers to each work site.

In terms of hazard identification and assessment, one SER provided a written comment stating that it takes 40 hours to conduct an assessment. This would include evaluation of "the task, PPE required, work site conditions (i.e., confined spaces), and equipment that is exposed to direct sunlight (metal doors of lift stations or valve boxes, and padlocks)." This SER said that current procedures and improvement options would also be assessed at this time. The SER currently does not have a formal HIIPP and thought it would take a minimum of 40 hours to develop a HIIPP without a template. The SER noted that the development of a HIIPP would include interviewing affected employees to gather feedback, noting that "it is easier with buy-in if the employees are involved in the process."

A SER submitted detailed written comments regarding OSHA's time and burden estimates that is included in Appendix C of this document. The SER shared their thoughts on a variety of estimates, including reviewing and modifying a HIIPP with employee participation at an establishment with union employees, initial hazard assessment, engineering controls, acclimatization, rest breaks, and supervision/observation. Regarding the time estimates for rest breaks in Table 8 of the SER Background Document, this SER said:

> The table shows only the actual [break time]. The documents state that OSHA is considering that donning and doffing PPE and walking to and from the shaded area is to not be counted. This could therefore increase the actual break time to 20 minutes (or more) per break. In a large facility or construction site, it could take 5 minutes to get to a designated spot and another 5 minutes to return.

This SER also indicated that it is easier to utilize water coolers indoors than it is to install faucets to provide water.

In written comments, another SER stated OSHA's time and equipment estimates are similar to what they experience with a few exceptions:

> Overall, the estimates are close. The exceptions would be the artificial shade, one tent would not be enough because we have multiple two-man and a few solo workers. Most of our vehicles are trucks and you can't fit four people in one vehicle (table 5)…. We allot more time for breaks (15 min./hr. @ 95° or higher heat index and as needed).

Two SERs also detailed in their jointly submitted written comments (included in Appendix C of this document) that OSHA underestimated the costs of compliance in many areas of the regulatory framework. For example, these SERs estimated that it would take least 90 days to create or modify a program, unlike OSHA's estimate of 40 hours to create a program from scratch. They also said that OSHA's estimate of 5 minutes per check-in every 2 hours is unrealistic, as meaningful check-ins would require more time for preparation, communication, and documentation. They also disagreed with OSHA's estimate of 5 minutes per measurement of the heat index or measurement of ambient temperature and humidity including calculating the heat index, saying that this could take 30 minutes. They also felt OSHA's recordkeeping time estimates, such as 5 minutes per employee recording heat-related illness or injury, are not realistic. Heat-related injuries and illnesses are often very difficult to determine, especially due to personal health conditions that their employees might have that involve similar signs and symptoms—that determination alone could take days, according to these SERs.

Other Issues

In jointly submitted comments, two SERs were against the name "Heat Injury and Illness Prevention Program" because heat hazards, unlike many other potential hazards, cannot be eliminated. They believe heat hazards can only be "mitigated" through engineering and administrative controls and PPE. Accordingly, these SERs requested that OSHA "delete the reference to 'Heat Injury and Illness Prevention Program' in any heat standard and allow employers to decide the name of their programs, or alternatively, call it a 'Heat Injury and Illness ***Mitigation*** Program.'"

One SER posited that a heat standard would be a heavier burden for southern states, creating a comparative advantage for northern states.

4. Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings SBAR Panel Findings and Recommendations

The findings and recommendations presented in this report address issues and concerns raised by participating SERs and reflect the Panel's recommendations with respect to those issues and concerns. The Panel's findings and recommendations are based on information available at the time this report was drafted. OSHA will continue to conduct relevant analyses and may obtain additional information relevant to the rule development process. Any options the Panel identifies for reducing the rule's regulatory impact on small entities may require further analysis and/or data collection to ensure that the options would be consistent with the Occupational Safety and Health Act of 1970, 29 U.S.C. 651 et seq., (OSH Act) (the statute authorizing a proposed rule) and adequately protective of workers. The Panel's recommendations are consistent with the principles that OSHA must show that a hazard poses a significant risk of material impairment of health or functional capacity before it can promulgate a safety or health standard. It is only after OSHA makes a general finding of significant risk that the analysis turns to whether the requirements of the standard are reasonably related to the standard's purpose and the rule is appropriately tailored. Further, the Regulatory Flexibility Act, 5 U.S.C. 601 et seq., requires OSHA to consider significant regulatory alternatives that achieve its statutory objectives while minimizing any significant economic impact on small entities.

Finding: *Flexibility and Scalability.* SERs expressed concern that the potential standard should not be a "one size fits all" approach and that it would be difficult for a standard to reasonably and effectively cover heat hazards in all settings and all regions of the U.S. SERs agreed that an OSHA standard should be flexible with a programmatic approach that allows employers to tailor their program to their particular workplace. SERs thought this flexibility was necessary for employers to prevent heat-related injuries and illnesses in their workplace most effectively. Some SERs thought the employer should determine what approaches should be implemented to address heat based on the conditions in their work settings as long as those approaches adhere to the regulatory framework. One SER asked whether the regulatory text, like the regulatory framework provided to SERs, could list multiple options employers can choose from.

Recommendation: The Panel recommends that OSHA's standard include performance-based provisions where practical to allow employers to tailor their heat injury and illness prevention program to their setting and situations, including the local climate and the type of work being performed, and also taking into consideration the size and complexity of the employer's operations. To the extent practicable, the Panel recommends that OSHA offer multiple methods of compliance with provisions of a heat standard.

Finding: *Heat Triggers.* SERs felt that the heat triggers that OSHA had suggested in the regulatory framework were too low and questioned whether the heat triggers were appropriate across different regions of the U.S. Some SERs reported finding OSHA's table of heat triggers presented in the regulatory framework and the use of an initial and a high heat trigger to be

confusing and stressed that OSHA should keep the requirements simple. SERs also asked how the heat triggers had been determined and whether they were scientifically based. However, other SERs supported having two trigger levels and some reported that they had already implemented policies based on multiple trigger points already. Some SERs suggested using the National Weather Service heat advisory as a single measure for a heat trigger tailored to local conditions.

Recommendation: In light of input received from SERs, the Panel recommends that OSHA consider whether the heat trigger levels presented in the regulatory framework—both the initial and high heat triggers—are too low, and also recommends that the agency present these heat triggers as simply as possible to avoid confusion. The Panel also recommends that OSHA provide the methodology used to select the heat triggers, including any scientific evidence or other supporting data, along with consideration of potential alternatives.

Finding: *Supporting Data.* A few SERs voiced strong concerns about the underlying data on heat related injuries and illnesses. SERs felt that the numbers of illnesses, injuries, and fatalities reported in the BLS data are low relative to the total number of employees nationally, suggesting that any action or change is unnecessary. One SER thought that the number of heat illnesses and injuries is statistically insignificant, given the millions of workers in the labor force. SERs requested clarification on these data including requests that the data on heat-related injury and illness be published in the record by detailed industry.

Recommendation: The Panel recommends that OSHA clearly present the data being used to justify a potential standard. The Panel recommends that OSHA thoroughly explore whether and how the injury, illness, and fatality data support the promulgation of a heat standard.

Finding: *Recordkeeping.* Many SERs questioned whether the recordkeeping requirements that OSHA had suggested were necessary. Some SERs thought they would have to hire additional staff or take time away from other safety initiatives to complete the paperwork outlined in the regulatory framework. SERs thought that documenting rest breaks would be infeasible, and that recordkeeping of daily temperature monitoring was unnecessary and would be burdensome to comply with.

Recommendation: The Panel recommends that OSHA reconsider or simplify recordkeeping of temperature monitoring and not require documentation of rest breaks unless the agency can show that such a requirement is necessary or appropriate to protect workers. The Panel also recommends that OSHA reconsider other potential recordkeeping to determine if those are necessary or appropriate and whether they positively impact worker safety and health.

Finding: *Injury and illness documentation.* SERs raised concerns about recordkeeping of heat-related injuries and illnesses requiring only first aid. Other SERs asked why OSHA is considering requiring records of first-aid-only injuries and illnesses that are heat-related while not requiring records of first-aid-only injuries and illnesses that are not heat-related. Some SERs stated it was unclear what first aid means regarding heat illness with one SER wondering

whether asking workers to take a break and hydrate because they appear to be hot would need to be captured as a first-aid incident.

Recommendation: The Panel recommends that OSHA not include a requirement for recording first-aid-only heat-related illnesses or injuries unless the agency can demonstrate some particular circumstances where such a requirement is necessary or appropriate to protect workers when such records are not required under OSHA's general injury and illness recordkeeping regulation.

Finding: *Temperature Measurement.* Many SERs reported already monitoring the temperature at their facility or job sites. SERs relied on various heat assessment methods including the OSHA-NIOSH Heat Safety Tool App, local weather forecasts, the National Weather Service's online calculator or measuring temperature with standard thermometers, heat index monitors, or wet bulb globe thermometers. Some SERs thought terms like "wet/dry bulb temperature" and "heat index" would be confusing while other SERs thought that measurements with a WBGT was complicated and may be difficult for some employers to use.

SERs told the Panel about some difficulties they have with measuring temperature at their locations. SERs with indoor worksites said that the temperature can vary across different parts of their facility. SERs with workers who are mobile and work at many different locations or elevations throughout the day said that temperature monitoring was a challenge for them because of various complicating factors.

Recommendation: The Panel recommends that OSHA allow flexibility in monitoring methods and not mandate a single method that employers must use to measure heat in their workplace or on their worksite. The Panel also recommends that OSHA clarify how and when temperature monitoring must occur for all employers but especially for those with indoor settings and those with mobile workforces.

Finding: *Rest Breaks.* The majority of the SERs said that they allowed their employees to take rest breaks when they needed to, but many objected to OSHA including a specific frequency or duration of breaks in a rule. Some SERs said that shorter, more frequent breaks might be ideal sometimes, while others said that the intensity of the job or other personal, physiological characteristics may make more frequent breaks necessary. Some SERs thought that giving 15-minute breaks every two hours would be unworkable in their situation. SERs in construction and manufacturing reported that there were times that work could not simply stop while workers took breaks (e.g., while pouring concrete, during certain industrial processes). In these cases, SERs reported that they rotated workers between more and less strenuous tasks. SERs with workers who wear complex PPE (e.g., construction, tree care, electric power) reported that their employees sometimes prefer to finish their work rather than stop for a break which would require removing and redonning their PPE.

SERs whose employees worked at heights (e.g., roofing, telecommunications towers) expressed concern that these employees could be put in more danger if they were required to climb down from their working position for a break and back up afterwards. These SERs wondered if breaks

needed to occur in a certain location like a shaded area on the ground or in an air-conditioned vehicle. A number of other SERs similarly wondered whether they had to provide air-conditioned break areas and require their employees take rest breaks in those areas. Some SERs said that their workers preferred to take breaks in non-air-conditioned spaces like shaded outdoor areas.

A few SERs wondered whether other activities including things like downtime while waiting for materials to be delivered, toolbox talks or job briefings, engaging in non-strenuous work tasks, or driving between jobs could be considered breaks.

Recommendation: The Panel recommends that OSHA consider allowing employers some flexibility, to the extent feasible within the constraints of the OSH Act, in the frequency of any rest breaks required in a rule. The Panel also recommends that OSHA clarify where workers can take breaks and provide the maximum flexibility possible to employers to determine what works best for their employees and situation. The Panel further recommends that OSHA clarify what, if any, activities employees can engage in during rest breaks.

Finding: *Water.* SERs universally reported supplying drinking water to their employees generally with reusable bottles and water coolers, single use water bottles, or plumbed fountains or faucets. While SERs acknowledged the necessity of supplying drinking water, some objected to some of the specified potential requirements in the regulatory framework. One SER felt that the amount of water specified as required was too much. Some SERs thought that the phrase "suitably cool" was vague and did not take into account employee preferences for their water temperature.

Recommendation: The Panel recommends that OSHA consider eliminating or better defining the term "suitably cool" to provide clarity and take employee needs and preferences into account. The Panel also recommends that OSHA provide clarity on methods for complying with any potential requirements related to the provision of water and allow for flexibility, when appropriate, in the amount of water required to be provided.

Finding: *Acclimatization.* Many SERs objected to OSHA's option in the regulatory framework for gradual acclimatization to heat, requiring employees to gradually ramp up their exposure to heat over the course of a few days. Several SERs said that if they force employees to work fewer hours due to acclimatization requirements, these workers might just quit and look elsewhere for work. Other SERs reported that they must pay their union laborers for a minimum of four hours regardless of whether they worked that full time meaning that the SERs would be paying for time not worked during the acclimatization period. Other SERs said it would not be possible to move workers to light duty jobs during the acclimatization period either because they did not have enough of that type of work or because light duty tasks were not available at their workplaces.

Some SERs thought that strictly prescribed acclimatization requirements were unnecessary because new workers they hired were either from the area and used to the weather, were coming from jobs where they performed similar tasks in similar conditions, or only those who were fit and able to work in hot weather would "self-select" into the types of jobs they offered.

Many SERs reported having some form of enhanced supervision or "buddy system" for workers who were acclimatizing to the hot working conditions. Some said that new workers worked alongside supervisors during their first weeks on the job which allowed for supervision of their heat tolerance. Others said that the training process where new employees are learning and working up to doing the jobs fully and on their own serves as an acclimatization process.

Recommendation: The Panel recommends that OSHA provide multiple options for acclimatization in the rule to allow employers flexibility in determining the best method for acclimatizing their workers.

Finding: *Solo and Mobile Workers.* SERs raised a number of concerns about applying a heat standard to workers who work alone and workers who move between job locations throughout the day. SERs mentioned that they were not sure how they would have to monitor the temperature when workers were working at multiple locations since employees could cover a large range with varying climate conditions throughout their workday. One SER said it was not clear what areas need to be routinely monitored if the work site is not fixed while others were concerned that tracking the temperature forecasts and relevant heat triggers for the worksite that each worker or crew is visiting that day would be difficult. SERs said that such tracking becomes a greater challenge if each worker or crew visits multiple worksites within a day.

SERs were also concerned that it would be difficult to monitor workers who work alone. SERs mentioned that it would be difficult to ensure that employees are taking required breaks with one SER saying that they believed this would become more difficult if mandated rest break durations depend on whether the temperatures were at or above the initial heat trigger or high-heat trigger. Other SERs mentioned the difficulty of monitoring employees for signs and symptoms of heat injury and illness when employees are working alone. While some had equipment that monitored an employee's movement and reported to the employer if that movement stopped or procedures for regular check-ins via phone or tablet applications, other SERs said that they would not be able to implement a buddy system or close supervision of employees given the work arrangements.

Recommendation: The Panel recommends that OSHA address the unique situations of employers whose employees work alone and/or travel to many worksites each day and offer flexibility to these employers and clarify the employer's responsibilities for employees in these circumstances.

Finding: *Training.* Almost all SERs agreed that training is one of the most important steps an employer can take to prevent heat injury and illness in their workers. SERs mentioned that they already provide some form of training on heat injury and illness prevention including recognition of signs and symptoms and how to respond and other topics including the importance of staying hydrated (electrolytes or water); working at a comfortable pace; contacting a supervisor to get an extra break or water; accessing and locations of cool down areas; sleeping well and being well rested; acclimatizing; and medical treatment of heat-related illnesses and injury. Training was reported to be provided in both formal and informal settings including regular training classes and tailgate or toolbox talks. Several SERs felt that a heat standard be centered around training;

one SER thought that a heat standard should mandate training while questioning the necessity and usefulness of other potential requirements.

Recommendation: The Panel recommends that OSHA include a robust training provision in a heat standard. The Panel also recommends that OSHA continue to provide support for employer training efforts by providing training materials, sample curriculum, videos, and/or other methods.

Finding: *Heat Injury and Illness Prevention Programs.* SERs reported a mix of informal and formal heat injury and illness prevention programs. Some said that they do not have a program that is in written form; while others said they have a written program that is relatively short in length (i.e., in bullet points). SERs were largely supportive of the idea of a written program or plan. SERs said that they believe a written plan could be beneficial and one SER said that their heat plan reduced the number of first-aid and more serious safety incidents, reduced workers' compensation costs, and maybe improved absenteeism. SERs said that employers should have flexibility to develop and implement such plans. Some SERs supported the potential exemption in the regulatory framework for very small employers (e.g., those with 10 or fewer employees) from the requirement for the plan to be in writing; one SER stated that requiring a written plan would place significant burden on these employers.

Most SERs agreed that, if the standard required updates of a written plan, that requirement should be for annual reviews and updates. One SER commented that they believed option to review and update "whenever necessary to ensure ongoing effectiveness" or "whenever a heat-related illness or injury occurs" were vague and/or unclear.

Recommendation: The Panel recommends that OSHA include a requirement for a written heat injury and illness prevention program that allows employers the flexibility to tailor their plans to their specific industry, location, and activities. The Panel also recommends that OSHA consider an exemption for very small employers from the requirement for the plan to be in writing. The Panel further recommends that, unless the agency determines that it is appropriate to do otherwise, review and update of the plan be required annually and if updates are required in additional situations that those situations be clearly delineated to reduce confusion and ambiguity.

Finding: *Cost/Time Estimates.* SERs disagreed with some specific time and cost estimates that were provided in the SER background document. SERs thought that OSHA's estimates for the amount of time it would take to develop the written plan and to conduct the hazard analysis were both too low as were the estimates related to monitoring of employees, measuring or calculating the heat index or temperature, and recording heat-related illnesses or injuries. One SER said that OSHA's estimate of breaks was too low because it only counted the break time but did not account for the time spent going to and from the break area.

Recommendation: The Panel recommends that OSHA review time and cost estimates in the economic analysis and revise where appropriate to take the experience and feedback of the SERs into account.

Finding: *Engineering and Administrative Controls.* Most SERs with indoor settings reported using some form of ventilation and air movement to cool their facilities. However, many of these SERs said it would be infeasible to lower the temperature using air-conditioning because their buildings were too large to do this effectively. A few SERs said they are limited in where they can place fans due to work processes or risk of contamination of materials or the air. Some SERs also said that they could not use some of the engineering controls discussed in the background documents such as misting fans (which could introduce slipping hazards or damage materials) or portable shelters (which cannot be used on work surfaces such as roofs). Other SERs discussed the difficulties of implementing engineering controls in buildings they do not own or when working on in-progress construction projects.

SERs also questioned whether some administrative controls suggested in the background materials would work for their setting. While some SERs said they adjusted work start and stop times to avoid working during the hottest part of the day, some SERs said they were unable to do so, for example, because they could not work too early in residential areas or because employees preferred a later start time. Some SERs said they used text messages or other electronic communications to remind employees of or alert them to heat hazards. Some SERs whose employees spend a significant part of their day driving worried that sending their employees electronic notifications would distract them and put them at risk of motor vehicle accidents.

Many SERs were, however, supportive of the idea of monitoring employees for signs and symptoms of heat illness and injury. Some SERs reported that they utilized a "buddy system" where employees monitored each other, or supervisors monitored employees, for signs and symptoms of heat illness or injury. Some SERs said they have found this practice very useful in reducing illnesses and injuries related to heat. Some SERs reported that they use technology like electronic monitors or check-ins via cell phone or tablet although SERs whose employees are mobile reported that that can be difficult if the employee is in a location with limited cell service. SERs suggested that biometric monitors or self-monitoring of urine color to determine hydration levels could be useful as well.

Recommendation: The Panel recommends that OSHA offer as much flexibility as possible to allow employers to implement engineering and administrative controls that are feasible and appropriate for their workplace and activities.

Appendix A

List of SBAR Panel Members and Staff Representatives

Small Business Advocacy Review Panel Members and Staff Representatives for the Potential Standard on Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings

Jessica Stone, SBREFA Chair, Occupational Safety and Health Administration (OSHA)
Email: Stone.Jessica@dol.gov Phone: (202) 693-1847

Bruce Lundegren, Office of Advocacy, Small Business Administration
Email: Bruce.Lundegren@sba.gov Phone: (202) 205-6144

Josh Brammer, Office of Information and Regulatory Affairs, Office of Management and Budget
Email: joshua_j_brammer@omb.eop.gov Phone: (202) 881-7986

Andrew Levinson	OSHA
Lisa Long	OSHA
Stephen Schayer	OSHA
Helena Brijbasi	OSHA
Jean Gleason	OSHA
Jason Hammer	OSHA
Eduardo Hernandez	OSHA
Zoe Petropoulos	OSHA
Dana Voinier	OSHA
Ashley Bieniek-Tobasco	OSHA
Tiffany DeFoe	OSHA
Jennifer Lawless	OSHA
Annette Iannucci	OSHA
Seleda Perryman	OSHA
Andrew Blevins	OSHA
Belinda Cannon	OSHA
Joe Coble	OSHA
Pamela Barclay	OSHA
Patricia Downs	OSHA
Inanje Mintz	OSHA
Chuck McCormick	OSHA
Rachel Carse	OSHA
Cherron Cox	OSHA
Carl Lundgren	OSHA
Joo-Hyung (Grace) Shin	OSHA
Brian Sloboda	OSHA
Anissa Harmon	OSHA SBREFA Coordinator

Email: harmon.anissa@dol.gov Phone: (202) 693-1713

Joseph Gilliland, Department of Labor Office of the Solicitor (DOL SOL)

Johnda Bentley	DOL SOL
Joseph Berndt	DOL SOL
Emma Goold	DOL SOL
Jennifer Levin	DOL SOL
Stephanie MacKenzie	DOL SOL
Linda Wiles	DOL SOL

Erin Fitzgerald, Office of the Assistant Secretary for Policy, Department of Labor

Stephanie Fekete, Office of Advocacy, Small Business Administration

Appendix B

List of SBREFA Videoconference Participants

SER Name	Organization Name
September 7, 2023 1:00-4:00 pm	
Meg Rietschlin	Rietschlin Construction, Inc.
Paul Criner	Criner Remodeling
Mary Glover	GLB Concrete Construction
Don Aragon	VA Electric, Inc.
Leslie Carrio	DePaoli Mosaic Company
Jeffery Mortenson	Safe Site Utility Services, LLC
John Morris	Morris, Inc.
Steven Beaman	Mammoth Sports Construction
Casey Banner	Banner Enterprises
Tillio Olcese	Olcese Construction
Gregory Zeitler	R & J Ertel Inc.
Michael DeBenedet	New England Yankee Construction, LLC
Timesha Beattie	Glass Ceiling Construction
Mike Truitt	Independence Contract Drilling
Nathan Hodges	Sulphur Springs Valley Electric Cooperative
September 12, 2023 9:00 am 12:00 pm	
Genevieve Gurnick-Long	Seaway Bolt & Specials Corp.
Ben McKnight	Electro-Spec, Inc
Sedra Beckman	CJB Industries
Samantha “Sammie” Linzy	SuperGraphics
Barbara Myers	Town Homes LLC
Rachelle Wagner	SIFCO Industries, Inc.
James “Jim” Nelson	LBT, Inc.
David Wood	Hill Electric
Don Brown	Fort Recovery Industries
Brian Corderman	Farmers Cooperative
Stuart Cofer	Cofer's Home and Garden
MJ Scott	Texoma Contracting Inc.
John Thompson	Munden Funeral Home & Crematory
Jason Condrey	Condrey Farms
September 13, 2023 4:00-7:00 pm	
Melinda Hathcoat	Edward L Baker Enterprises Inc dba Baker Products
Tim Agra	Mercury Sightseeing Boats, Inc.
Jimmy Moore	Holley-Navarre Water Systems, Inc. (HNWS)
Jared Kelley	SEMO Electric Cooperative
Kim Grzywacz	CIT Charters, Inc.
Dan L. Jackson	Meadow Farmers Coop Gin
J'Quincy Jones Sr.	Sweet Farmer Jones
C. Jay Hansen	CJ Hansen Co., Inc
Rafael Arroyo	Smog Plus DMV Registration Services LLC
Linda Pryor	Hilltop Farm WNC, LLC
Eric Betke	Farmrail System, Inc.
Wes Morgan	Rolling Hills Gin

SER Name	Organization Name
September 14, 2023 1:00-4:00 pm	
Tim Scherpenisse	New Life Arboricultural Services
Andrew Wimmel	Sam Hill Tree Care
John R. Kotoski	River Run Golf Club
Lydell Mack	Big Canoe POA
Caleb Bruchez	Princeton Tree Care
Sarah Beagle	Evans Tree Care LLC
Steve Martinko	Contender's Tree & Lawn Specialists
Damon Hitti	Weissinger Hills Golf Course
Chad Allen	The Club at Chatham Hills
Tony Emanuele	Rotating Equipment Repair, Inc.
Henry Siemer	Siemer Milling
Brian Tulip	Larch Tree Service, LLC
Russ Libby	Hidden Hills Golf Course
Gregory Jack	The Oaks Club
Heidi Johnston	William A. Day, Jr. and Sons Logging and Trucking
September 18, 2023 9:30 am 12:30 pm	
Alyssa Kane	Express Managed Services (Hoehn Plastics)
Stephen Sims	SomerSplash Waterpark (City of Somerset)
Rodney Petrick	Ridgeworth Roofing Co., Inc.
Jennifer Johns Friel	Mid West Fabricating Company
Eric Hopkins	Boozer Laminated Beam Co., Inc.
Earl Miller	Accurate Castings Inc.,
Matt Clark	Williston Fire Department
Peter Rossi	Vermont Electric Cooperative
Lanita Gantt	Rusk County Electric Cooperative
Aaron Paulette	Elevated Services LLC
Louis Rainey	The Pelican House Restaurant / XLRTX Holding, LLC
Jim Garrison	Muscatine Power and Water
Kenneth Goss	George A. Kint Inc.
John T. Craig	Southern Ionics Incorporated
Dave Honer	Twin City Die Castings Company
September 19, 2023 9:00 am 12:00 pm	
Larisa Bontrager	Belstra Milling Co.
Joe Lewis	Yard Solutions
John Fleming	Weathercraft Co of Colorado Springs, Inc
Tony Gonzalez	The Gonzalez Group, LP
Dan Kasat	Mullins Cheese, Inc.
Mark Ables	Ables Landscapes
Brendan Quinn	Ernest Maier
Amy Burkett	Burkett Arbor Care
Denise Campbell	Advanced Inspection Technologies (AIT)
Mark Sacra	Goodwill of Central and Coastal Virginia
Kellie Kimball	Holes Incorporated

Appendix C

Written Comments from SBREFA Videoconference Participants

CITY OF
WILLISTON
FIRE DEPARTMENT

September 29, 2023

U.S. Small Business Administration, Office of Advocacy

Occupational Safety and Health Administration

RE: Small Entity Representatives (SERs) Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings

Dear Bruce Lundegren and the SBA Office of Advocacy:

Thank you for the opportunity to participate and be a part of the OSHA review panel for the Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings. Listed below are general comments and concerns related to the potential rule on behalf of the Williston Fire Department, The International Association of Fire Chiefs (IAFC), and the Safety Health and Survival (SHS) Section of the IAFC.

Outdoor Emergency Scenes, Training or Working Environments:

- The potential temperature parameters listed for outdoor work are not applicable as a standalone rule during emergency operations.
- Emergency incidents in fire protection include fire suppression, technical rescue, emergency medical services, hazardous materials, and a variety of other calls for service.
- A rule intended to be all-encompassing for work-to-rest and critical criterion would not be able to be tailored to these events and their complexity.
- The National Fire Protection Association (NFPA) required personal protective equipment (PPE) for use during these incidents, creates different platform considerations and impact for the wearer compared to other occupations.
- Training and station outdoor working environments are more applicable to the intent of the data provided for review. However, during training exercises, fire personnel are still required to wear the appropriate PPE and are subject to the same critical temperatures as during emergency operations.

Indoor Working Environments:

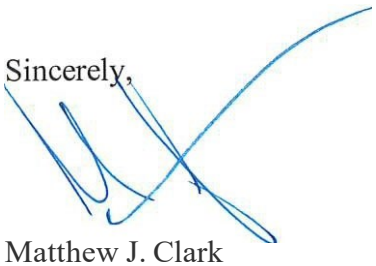
- Indoor working environments for emergency service personnel align with the intent of the data provided.
- In these environments, fire protection personnel are provided fire resistive station wear also in accordance with NFPA.
- Most indoor working environments are climate-controlled. However, in the event of emergency scene training indoors, the same heat restrictions would apply to additional PPE ensembles.

Recommendations:

- A mandated rule regarding temperature exposure limits, required work-to-rest ratios, PPE requirements, and rehabilitation procedures would be difficult to apply across the board to fire protection agencies regardless of size and complexity.
- The ever-evolving nature of emergency scenes and limited staffing for smaller fire protection agencies would require a guideline or recommendation approach.
- The incorporation of a Heat Injury and Illness program within a fire protection organization should be required. However, the extent of the program and the ability to tailor the program to the size and emergency service needs should be designated to the authority having jurisdiction.
- The need to mitigate Heat Injury and Illness incidents in fire protection should be targeted around training personnel at the front-line level and tailored training for supervisors. Front-line personnel should be educated on the signs symptoms and, most importantly, the proper nutrition/hydration needed to avoid these injuries or illnesses. Supervisor training should be tailored around recognizing signs and symptoms in others, proper work-to-rest recommendations/rehab considerations, how to build a proper prevention program, and implementation within a fire protection organization.
- The fire service has developed Incident Safety Officer (ISO) and Health and Safety Officer (HSO) standards for fire protection agencies. These programs already incorporate Heat Injury and Illness benchmarks in coordination with NFPA 1500 *"Standard of Fire Department Occupational Safety, Health, and Wellness Programs."* These programs guide the incorporation of safety and health programs within an organization. However, from a small agency perspective, these are often limited to internal Standard Operating Procedures/Guidelines. Dedicated ISO/HSO officers are limited due to staffing capabilities at the small agency level.
- Recommendations from OSHA regarding Heat Injury and Illness prevention should be aligned with the components of NFPA standards and encourage departments to adopt these standards within the capabilities of their agency size, response needs, and fiscal ability.

If you have any questions, please contact me at mattc@ci.williston.nd.us or (701)-572-3400.

Sincerely,



Matthew J. Clark

Fire Chief, Williston Fire Department

September 25, 2023

Mr. Bruce E. Lundegren
Assistant Chief Counsel
SBA/Office of Advocacy
409 Third Street, SW
Washington, DC 20416

Dear Mr. Lundegren:

Thank you for the opportunity to serve as a Small Entity Representative (SER) for the Small Business Advocacy Review (SBREFA) Panel for the proposed Heat Injury & Illness Prevention in Outdoor and Indoor work settings.

I am owner and operator of Condrey Farms in Lake Providence, LA, where we produce cotton and soybeans. I currently serve as Louisiana State Chairman on the American Cotton Producers as well as past President of the Louisiana Cotton and Grain Association. I am also a Producer Delegate for the National Cotton Council.

As we continue to witness record high temperatures across the country, our industry welcomes the opportunity to discuss the development of a workable standard to prevent heat injury and illness, including the creation of training materials.

The safety and protection of our workforce is a top priority and is vital to the success of my operation. The state of Louisiana witnessed record high temperatures in the month of August, and we made it a priority to ensure that each employee was provided necessary hydration through water and electrolyte beverages. We also provide access to shade and air-conditioned facilities to ensure our workers get the breaks required from the summer heat. Condrey Farms could not function without an adequate and protected workforce, and we make it a priority to ensure each of our employees are protected from the heat.

In the development of an OSHA Heat Standard, regionalization must be considered when requirements are triggered based on temperatures. For example, an "initial trigger" of a 76-degree heat index and an 83-degree heat index for a "high-heat trigger" is unrealistic for growers in Louisiana and would not be considered excessive heat throughout much of the Cotton Belt. Heat indexes at these temperature rates are comfortable working conditions for most employees and these temperatures thresholds could put Southern employers at a disadvantage to Northern employers who would trigger these heat indexes during only a few months out of the year.

I am also concerned about the regulatory requirement that will be placed on me and other employers to comply with the Heat Standard. Agricultural work is very seasonal in nature, and both employee training and recordkeeping requirements must be reasonable and necessary. Our farm is currently implementing many of the options outlined in the regulatory framework.

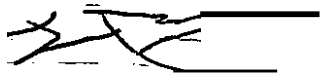
However, despite being good actors and protecting our workforce, we will still be forced to provide training and develop a written OSHA Heat Standard that will be thoroughly bureaucratic and could require unnecessary paperwork.

Any training requirements must be flexible and should recognize that video training may not be workable for many employers since agricultural jobs occur mostly in rural areas where access to the internet can be limited. OSHA should have tangible options for training such as brochures that provide step-by-step directions for employers.

Requiring written directions to the work site where there are multiple fields as part of a farming operation would be impractical. Farmland ownership and leases change constantly, which would require constant updating of paperwork by the employer. Our workforce has access to smartphones which through multiple applications can provide step-by-step directions to farm locations by the simple dropping of a "pin." All paperwork requirements for small business such as Condrey Farms must be practical.

Thank you for the opportunity to offer these remarks, and I am grateful to be a part of this Panel. As this process moves forward, I would encourage OSHA to develop a standard that provides necessary protection to our employees while also ensuring our jobs remain attractive in an ever-competitive work environment.

Sincerely,



Jason Condrey
Condrey Farms

National Grain and Feed Association
TRANSFORMING AMERICA'S HARVEST ™

1400 Crystal Drive, Suite 260
Arlington, VA 22202
(202) 289-0873 | ngfa.org

BY ELECTRONIC MAIL

October 3, 2023

OSHA Docket Office
Docket No. OSHA 2021-0009–0059
U.S. Department of Labor
Occupational Safety and Health Administration
200 Constitution Ave., NW
Room N-3653
Washington, DC 20210

Re: Docket ID–OSHA–2021–0009 – 0059 – Memorandum Reopening the Comment Period on Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings to Allow for the Submission of Documents and Comments

The NGFA, established in 1896, consists of more than 1,000 grain, feed, processing, exporting and other grain-related companies that operate more than 8,000 facilities and handle more than 70 percent of all U.S. grains and oilseeds. Its membership includes grain elevators; feed and feed ingredient manufacturers; biofuels companies; grain and oilseed processors and millers; exporters; livestock and poultry integrators; and associated firms that provide goods and services to the nation's grain, feed and processing industry. The NGFA also consists of 27 affiliated State and Regional Grain and Feed Associations.

The NGFA, as the principal representative of the grain handling, feed manufacturing and processing industry, has been in the forefront of research, education and training designed to enhance safety in the grain handling, processing and feed sectors.

The industry is dedicated to pursuing and promoting technological innovations, new practices and safety training and education programs that contribute to safe and efficient grain-handling operations. These programs are vital, first and foremost, to safeguard human lives. We have demonstrated a commitment to fostering safety, prior to and after the promulgation of the grain handling standard, *29 CFR 1910.272*.

NGFA member companies are considered essential critical infrastructure. Grain handlers, producers, retailers and transportation companies are crucial for community resilience and the continuity of significant functions including the U.S. human food and animal feed supply chains. These companies come from all sectors of the grain, feed and processing industry that range from large multinational companies to producer owned cooperatives to small family businesses.

A majority of NGFA's membership consists of small to mid-size regional cooperatives that are owned by farmers. Many of these independent businesses are involved in both grain handling and agricultural retail operations. This includes purchasing and storing grain from farmers as well as the selling of seed and fertilizer. The potential heat injury and illness prevention in indoor and outdoor settings standard being considered by the Small Business Advocacy Review (SBAR) Panel under the Small Business Regulatory Enforcement Fairness Act will primarily impact the grain handling side of these small businesses.

NGFA appreciated the opportunity to participate in the September 12, 2023 SBAR session and these written comments memorialize the input provided by Small Entity Representative, Brian Corderman with NGFA member company Farmers Cooperative Association in Alva, Oklahoma.

Currently, the grain, feed and processing industry is proactively addressing heat exposure and has taken appropriate steps to reduce related risks. As a result, NGFA urges the agency to cease the rulemaking process since there are existing federal agency efforts and laws that address this matter. There is no one-size-fits all approach to address this, as climate varies from region to region and the health and underlying factors that contribute to heat stress vary by employee. As Mr. Corderman noted, there have been no recorded heat injuries or illnesses at his company, over the last five years, based on the current program that his company already has in place (that are also the main framework for the proposed rule) includes:

- Training employees in the symptoms of Heat Stress, Heat Stroke, Heat Exhaustion, Heat Cramps, and Heat Rash (including first aid for each symptom);
- Water Breaks;
- Acclimation;
- Rest Breaks; and
- Monitoring Environmental Conditions and Workers.

Our primary concern with the proposed rulemaking on heat injury and illness prevention is that it will place an undue regulatory burden on grain handling facilities in both indirect (employee time) and direct costs (equipment) and additional paperwork requirements. Some examples include: 1) additional paperwork burdens related to monitoring and recording the proposed initial heat (80°) or high heat index (87°) in numerous locations throughout a facility both indoor and outdoor; 2) retrofitting facilities and purchasing new equipment related to ventilation and thermometer measurement (wet bulb) in outdoor environments; and 3) acclimation and employee training, preparedness and equipment, to name a few.

With the draft that was shared with the SBAR panel, a critical issue is the current shortage of employees. In the midst of an already severe labor shortage, additional training requirements followed by additional equipment would create yet another barrier to hiring much needed and scarcely qualified full-time, part-time and seasonal workers in the grain, feed, processing, milling, export and transportation industries.

Recruiting those to work in U.S. agriculture is already a challenge. Further those with expertise in the field is difficult when the industry is already facing a lack of truck drivers, facility workers, warehouse labor, and other logistical workers. As a result, these additional responsibilities for small businesses, would lead to increased costs in both time and equipment to implement the burdensome requirements on the proposed regulation. The additional costs will lead many of the grain operations in these small companies to either consolidate with a larger company or close altogether which could then have a significant impact on the local economy. This ripple effect will increase costs for farmers, who will have fewer options on where to purchase their supplies and sell their products which will then lead to increased food prices for the consumer. Also, the decrease in the number of facilities for farmers to purchase products from and sell commodities to will lead to an increase in hazardous chemicals on the roadway since many will have to drive longer distances to access the material.

Two critical issues in the proposal are related to monitoring and acclimation. Specifically, the monitoring requirement will require a designated individual for this position to monitor the heat index and various indoor and outdoor locations throughout the day. For small businesses with limited personnel, this will impact the amount of time that the designated monitor can contribute to the functions of their job description. As Mr. Corderman noted, at certain times of the year, the temperature at the beginning of the day exceeds the high-heat index if humidity is included. In place of monitoring, a simple "buddy system" of employees looking out for another is the more appropriate action to take. By training employees in the symptoms of heat stress, heat stroke, heat exhaustion, heat cramps, and heat rash and the appropriated first aid treatments, the employees can complete their task while also making the safety of their co-workers a priority.

In the grain handling industry, a majority of facilities' employees are working outside in the heat a daily basis. This includes "indoor" work in grain storage bins, head houses, unloading pits and warehouses that are located "outdoors." In some cases the temperature in the unit can exceed the high heat index based on the outdoor temperature. However, many of these units do not have any mechanical ventilation devices for cooling (outside of venting) due to the impact that the cooling device could have on the quality of the bulk commodities e.g., corn, wheat, and soybean stored in the location. In addition, additional cooling units or ventilation in these locations could have an impact on dust control and suppression which is a critical factor in dust explosion prevention within the grain handling industry. Further, there is no need for costly, additional "cooling area" for employees, e.g. trailer with air conditioning when they can use the administrative office space at the facility for this purpose. Finally, OSHA does not specifically identify what is considered to be defined as "indoor" and/or "outdoor;" therefore, it is very difficult to determine what should be done tin each circumstance to address the issue.

In addition, breaks can eliminate the proposed gradual acclimation process of exposure to heat. 20 percent or 40 percent exposure to heat during a workday is not possible in certain environments. Regular work breaks can be scheduled into the workday for employees that can provide cover for employees.

As Mr. Corderman noted, an example of the increased costs is illustrated with his company consisting of 27 full-time personnel. Based on the proposed requirements, it is estimated that the proposed costs to implement the proposed rule e.g., monitoring, training,

equipment, etc. will cost $30,000 in indirect costs (time lost) and equipment $100,000 – $200,000 in the purchase of cooling and ventilation equipment for "indoor" facilities such as grain bins and elevators. This doesn't include the costs to make sure each of the locations has the correct electrical wiring and the appropriate rating. In addition, the time to comply and implement the procedures identified on pages 28-29 of the SER Background Document will be approximately three times more hours than proposed by OSHA. He further estimates that maintaining and onboarding new employees would be $10,000 in costs annual costs per employee in terms of training and equipment e.g. PPE.

While the hazard of exposure to excessive heat is real, the development of a reliable and practical model that can be used to set appropriate permissible exposure limits and action levels is complicated. These factors are significantly affected by the nature of the work, the duration of the work, the timing of breaks, where it is being performed, humidity, wind, and the clothing worn by the worker. It seems questionable whether the approach taken in California, Washington and Oregon, which is based on two temperature levels, would also be applicable to Oklahoma, North Dakota or Ohio.

As a result, all of factors for protecting workers against heat strain should be considered by places of employment and not be based on a complex heat index formula. In addition, places of employment should respond to all situations where employees report what they have been trained to recognize as the physical signs of heat strain. However, the singular focus on temperature and heat stress index is not appropriate. Heat stress is much more complex than temperature or heat index. Using temperature or heat index is too simplistic and not based on real risk of disease.

Conclusion

In closing, the NGFA reiterates their opposition to the creation of a one-size fits all federal regulation to replace an existing program that OSHA can currently enforce through the General Duty Clause. We firmly believe that employers should be responsible or address heat hazards at individual facilities as climate varies from region to region and the health and underlying factors that contribute to heat stress vary by employee. Further, OSHA's proposal is based on a heat index formula that do not take into account the wide variety of tasks that could be performed or other factors that cannot be addressed through engineering controls.

Thank you for your consideration of our views. We would be pleased to respond to any questions you may have.

Respectfully submitted,

Michael Seyfert
President and Chief Executive Officer

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REMODELING
PERSONALIZED KITCHENS, BATHS & ADDITIONS

September 29, 2023

Jessica Stone
SBREFA Chair
Occupational Safety and Health Administration
U.S. Department of Labor
200 Constitution Ave NW
Washington, DC 20210

(Submitted electronically via Regulations.gov)

Dear Ms. Stone:

I would like to thank the Occupational Safety and Health Administration (OSHA) and the Small Business Administration's (SBA) Office of Advocacy for the opportunity to serve as a Small Entity Representative in the review of the potential standard for Heat Injury and Illness Prevention under the processes mandated by the Small Business Regulatory Enforcement Flexibility Act (SBREFA). My comments when referring to the SBREFA Panel or SBREFA process is limited to the potential Heat Injury & Illness Prevention in Outdoor and Indoor Work Settings, and my participation on the SBREFA Panel held September 7, 2023.

My name is Paul Criner, and I serve as Vice President and Co-Owner of Criner Remodeling, a licensed and insured Class A contractor, as well as a family-owned and operated home remodeling company, that has served Newport News, Yorktown, Hampton, Williamsburg and the coastal region of Virginia for more than 45 years. Criner Remodeling has a total staff of 14 employees, nine of which are field workers. Criner Remodeling may be overseeing and/or performing work on five to seven different projects at any given time, so given the small number of field staff, there may be projects where one of its employees is not present to monitor a jobsite.

As the co-owner of a small business working in residential remodeling, I have obtained several certifications to ensure the success of Criner Remodeling including Certified Aging in Place Specialist (CAPS), Certified Green Professional (CGP), and Certified Green Remodeling (CGR).

In addition, Criner Remodeling is considered a small business based on the SBA size standards for the North American Industry Classification System (NAICS) code 236118 – Residential Remodelers. Criner Remodeling generates annual revenues well below the SBA-recognized threshold for small businesses in residential construction. As part of my business, on occasion, I will be out on jobsites working in the field and coordinating projects with my employees and field staff; these projects can be entirely inside a home or have a combination of indoor and outdoor components to the remodel.

Based on my review of the materials I received in preparation for the SBREFA Panel, and participation on a teleconference with other industry representatives, as well as OSHA and SBA representatives, I have concerns with the scope of the potential standard for Heat Injury & Illness for Outdoor and Indoor Work Settings (hereafter "potential Heat Standard"). The following comments address the substance behind the questions that are most relevant to the construction industry and, on occasion, my firm's specific focus on remodeling (i.e., the process of changing or improving the appearance of an outdated, broken, or damaged structure). Both the discussion during the SBREFA Panel and information below reflect my experience in the field in response to the information shared to date by the agency.

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The Agency Must Provide Flexibility with any Engineering and Administrative Control Requirements

As discussed during the SBREFA Panel, many of my concerns with a forthcoming heat injury and illness prevention standard are centered around the administrative and engineering control elements listed in the agency's regulatory framework. While I do support some of the options provided in the document to address heat hazards and illnesses, it is highly important for OSHA to recognize the need for flexibility in compliance among small businesses.

A. Engineering Controls Should not be so Limited to Leave Employers Without Effective Options

While I do agree the possible options listed in the agency framework may be effective ways to cool workers as needed, OSHA should not limit itself to a handful of engineering control methods, some of which may be impractical or costly for small businesses. The agency must remember that the residential construction industry is primarily made up of small businesses who construct and remodel the majority of housing annually in the U.S. Like most hazards, the risk of heat-related injury depends on a number of factors, which may not be the same across various industries or even project sizes.

In addition, the resources available to each individual business requires businesses to factor in the geographical differences of their areas along with the type of work being performed, and costs associated with the particular engineering controls. For example, jobsites in the flat plainlands of the Midwest may not have many trees or other opportunities for natural shade; they may also be subject to high winds and render tents useless or impractical. Additionally, certain options may be available or more feasible during the different stages of a project. From my perspective, as a remodeler, for instance, my workers may be able to place an air-conditioned truck in the driveway of the home, but in new construction builds, that vehicle may have to be parked far away from the site during the early stages of building a multifamily or single-family development. Moreover, having an air-conditioned vehicle in close proximity on a remodeling project could itself vary if it is a townhouse or other multifamily location where parking is limited for residents and guests.

It is part of our business' mission to put the health and safety of our employees and the workers on our jobsites first, but the way to achieve that goal is dependent on the different factors unique to every one of our jobs. Therefore, I recommend OSHA implement an approach that allows employers to exercise "reasonable care" that allows businesses of all sizes to work within their means and find the best solutions that work for their workers, job activities, jobsite considerations, etc. While the examples discussed concerned outdoor work sites, the agency should adopt this same flexible approach for indoor work. I cannot emphasize enough that one size does not fit all and can vary markedly from jobsite to jobsite and even for the same employer.

OSHA must also provide a definition and examples which clarify the phrase "as close as practical to the work area" in its proposed rulemaking. As mentioned earlier, different stages of a project and the different tasks on those projects decide the best method of compliance, and as such, the locations of those controls to give workers cool, shaded areas to rest vary. Many framing contractors or roofers cannot simply set up a tent to provide shade without the risk of making the task infeasible or creating a greater hazard. OSHA should not consider distance requirements between the work performed and the location(s) of shaded rest areas, nor should they have a set list of activities that should be considered. The agency should instead allow for flexibility

in where and how employers provide these cooldown areas to maximize harm reduction and reduce further risk or infeasibility.

B. OSHA Should Clarify Its Proposal Regarding Employer-Provided Drinking Water

Currently, we provide water for our employees on days where heat could present a hazard and further supplement those drinks with electrolyte solutions on days our field supervisor considers "high-heat temperatures." We do not have a set initial-heat or high-heat temperature to trigger providing water and other drinks and leave it at the discretion of our field staff. We also encourage the consumption of as much water as needed during those days and give workers the ability to travel to and from a convenience store, grocery store, etc., to refill coolers with ice and more drinks using both a company vehicle and funds to purchase these drinks.

Given our success with this approach, I am concerned over OSHA's proposal to require a specific amount of water for employees to drink in a work shift. Considering the number of your own employees and subcontractors on a jobsite throughout the days, this requirement would be virtually impossible to keep track of each individual worker's consumption, while exposing employers to potential citations and fines through no fault of their own. I support implementing the option outlined in the SBREFA Panel materials that gives employees "ample opportunity to drink water and must be encouraged to frequently consume water or other acceptable beverages" without placing a specific hourly or daily amount of water consumed. Talking again about "reasonable care" for workers, allowing and encouraging drinking water and other replenishing beverages further ensures worker safety and removes the administrative burden that would come with recording water intake throughout the day. As the construction industry already deals with issues that arise simply from being on a multi-employer worksite, I also recommend the standard include explicit language saying an employer – not the general contractor – is directly responsible for providing water to their own employees.

C. Acclimatization and Rest Breaks Should Allow for More than Just a Standard Approach

According to the agency's proposed regulatory framework, OSHA will be considering an option for an employer-developed protocol for both new and returning workers, but the creation of this protocol should also account for the varying natural responses to heat and the acclimatization capabilities among individual workers. Workers may have unforeseen responses to heat by way of medication or other substances in their bodies or underlying health issues, all of which cannot be asked (and may not be known) by the employer under the Health Insurance Portability and Accountability Act and Americans with Disabilities Act, that could occur at any point during the day – regardless of how well acclimatized a worker may be. At the same time, workers who have never worked on a construction site or who have not worked on a site for a long period of time could be very well-acclimated to the climate of that area and there would not be a need for them to follow a set workload schedule as they begin work. Additionally, with so many output-based jobs on a residential construction site, workers may feel incentivized to continue work past a mandatory percentage allowed for a single workday.

Relatedly, a mandated rest break does not take into account different tasks on a jobsite that may need a worker to be constantly tending to that job. Looking at a concrete paver, for example, this skilled worker may be involved in an activity that demands he/she be constantly monitoring the task and is typically paid based on output.

Once a concrete pour begins, a worker must always be managing the pour as well as the drying process in order to prevent cracks or other forms of damage to the concrete. Worker rotation may seem like the best answer for this, but as discussed, there may not be an additional worker – either your own or the subcontractor performing the task – to rotate, which would also raise independent contractor status concerns if a non-employee worker was told what and how to do a particular job. Given how these and other workers are paid, they may also not see any benefit or desire to take a mandated break, putting the employer and/or general contractor in trouble for something solely decided on by the worker. This is particularly true if a subcontractor is on the jobsite for a discrete task that takes less than two hours to complete before they leave for another job elsewhere.

Therefore, if OSHA decides to move forward with a proposed Heat Standard, I urge OSHA to offer options that allow employees to take rest breaks "as needed to prevent overheating." I believe this approach allows employers and employees the best flexibility to best manage their own working conditions on jobsites.

D. Additional Administrative Controls Should be Flexible

OSHA's proposed regulatory framework also discusses options for altering work schedules to fall outside of the peak heat hours or during seasons of high heat. However, these practices are almost near, if not totally, impossible with the constraints placed on our industry's type of work and today's housing demand. The success of our small business depends on taking on projects year-round, so turning down projects during the hotter months (which can be 4-6 months in my region) would greatly impact our employees' livelihood. As our industry also experiences supply chain disruptions and worker shortages, project timelines may be pushed back further than anticipated, to the point where we may be forced to complete a project that continues into the hotter months of the year.

Given the only option for altering work schedules would be scheduling outside of peak hours, local noise ordinances and homeowner associations' policies may prevent early morning or late-night work on outdoor projects and would render any work performed typically before 7:00 in the morning or after 9:00 in the evening impossible with significantly rare exceptions. The agency must provide clear language on which standard takes precedent if an employer can establish a need to work during prohibited hours, as well as a clear definition of what that need is.

Many of our projects have one employee at a site at a time, and despite other panelists mentioning this practice is in place on their sites, a buddy system is likewise entirely infeasible for the size and scope of our business. Similarly, the framework document does not discuss worker rotation as an administrative control, yet if this does become an option that the agency will consider, I believe this option should also have the same conditions as the inclusion of a buddy system. With the proper resources and staff to make these methods feasible, both options are seemingly effective compliance solutions. However, these methods should only be two of many options employers can pick and choose in establishing reasonable care for their employees.

Even Without a HIIPP, Our Current Workplace Practices Have Proven to Mitigate Heat-Related Illness and Injury

Despite there being no required practices to reduce heat injury and illness on our jobsites, we have nevertheless put in place procedures that address this issue. Along with providing water and cool rest areas for workers throughout a shift, our field supervisors assess each jobsite for heat hazards and determine the best course of

action that ensures worker safety, which includes the provisions mentioned above. Further, we currently do not have a written heat injury and illness prevention program (HIIPP) in place; however, our business has not experienced what the agency would consider a recordable incident that resulted from a heat-related injury among our employees.

On the topic of workplace HIIPPs, should OSHA put forth the requirement for a written program, I urge the agency to stay consistent with other written program requirements and exempt employers with fewer than 10 employees from this requirement (*See* 1926.35(e)(3)). While we are very close to the proposed employee threshold, we are fortunate to have either the internal expertise or resources at any given time to create and regularly update a written program, unlike many of the even smaller businesses within our industry who cannot justify these costs when having to communicate the program to such a small number of workers.

OSHA Should Allow for Low-Cost, Effective Hazard Assessment Methods

I recommend the agency not consider the use of the wet bulb globe temperature (WBGT) method for its potential Heat Standard, as the general contractor on a construction site must rely on its subcontractors to have access to and know how to use this method to assess jobsite hazards. The WBGT method, along with other complex methods, could prevent subcontractors from recording accurate measurements, which would likely result in penalties for both the subcontractor and the general contractor.

When assessing the weather for a jobsite, our employees use an easy-to-understand, easy-to-access source such as the National Weather Service mobile app or website for an accurate forecast of that area. I would, therefore, recommend OSHA allow for the same or a similar general weather assessment and heat hazard identification method for jobsites.

The Proposed Recordkeeping Requirements are Overly Burdensome and Should be Revised

Our current practice of daily weather and hazard assessments allows us not to keep records on this information, which we view as having little use and unnecessarily adding to our project costs. For every worker in our company, we also offer a portion of our new hire training, as well as our annual refresher training as the temperatures begin to rise in spring/early summer, which focuses on heat hazard safety and recognizing signs and symptoms of heat stress for themselves and among workers on a jobsite. This practice allows us to convey the critical information needed to reduce the risk of heat-related injury or illness and ensure their safety on our jobsites, all while not having to keep up with records that simply increase burden.

Additionally, keeping records on each worker's training, along with other records related to heat hazard assessment and risk reduction, would be impractical in reality for small businesses in our industry. Specifically, the agency's longstanding Multi-employer Citation Policy has the potential to penalize the general contractor on jobsites for the violations of a subcontractor – even if the general contractor is not aware of and has no control over the violation. My company is small, and I frequently hire subcontractors to do particular projects. This means I am not on every jobsite every day a remodeling project is underway.

Assuming many elements of this standard will have some connection to this policy, the agency would then deem a general contractor equally liable for many of the subcontractors' mistakes, such as failing to train or record training for their workers. In this scenario, and despite the role of a general contractor being to ensure a

subcontractor has the required safety and training programs in place for a project and *not* to train a subcontractors' workers, the onus then falls on the general contractor to ensure subcontractors are compliant simply to avoid receiving a citation themselves. This creates an unreasonable and costly burden on contractors that is unnecessary and unmanageable in practice. Further, placing responsibility on a general contractor to track training for every layer of subcontractor, vendor and supplier that needs required heat training could inappropriately label these independent contractors and separate businesses "employees." For a small business owner, this approach is wholly infeasible and cost prohibitive.

As discussed throughout this letter, OSHA must be very explicit in any proposed standard in placing responsibility on the employer of their respective employees. The agency should also exclude additional recordkeeping requirements on heat stress-related training, acclimatization, and other elements of the proposed standard that would needlessly increase costs for our business and for the residential construction industry in general.

Conclusion

I appreciate the opportunity to serve as a small entity representative during this process to ensure that the residential construction industry through my experience is considered when developing a potential standard for heat injury and illness prevention in indoor and outdoor work settings. I cannot overstate the need for providing flexibility to small businesses and adopting an approach that emphasizes reasonable care for workers. Further, given the uniqueness of the construction industry, I urge the agency to put forth a separate construction standard that provides measures and guidance specific to the industry and where businesses of all sizes and sectors are capable of complying. I look forward to continuing discussions with OSHA and other panel members through this rulemaking process.

Sincerely,

Paul Criner, CAPS CGP CGR
Vice President & Co-Owner
Criner Remodeling

CC: Bruce Lundegren, Office of Advocacy, Small Business Administration
Josh Brammer, Office of Management and Budget, Office of Information and Regulatory Affairs

PUBLIC SUBMISSION

Comment from Criner, Paul Criner Remodeling

Posted by the **Occupational Safety and Health Administration** on Oct 2, 2023

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I would like to thank the Occupational Safety and Health Administration and the Small Business Administration's Office of Advocacy for the opportunity to serve as a Small Entity Representative in the review of the potential standard for Heat Injury and Illness Prevention under the processes mandated by the Small Business Regulatory Enforcement Flexibility Act (SBREFA). The attached letter expands on my comments during the SBREFA Panel held on September 7, 2023 regarding the potential Heat Injury & Illness Prevention in Outdoor and Indoor Work Settings.

Attachments 1

Comments from Paul Criner, Criner Remodeling

More Information

Download (https://downloads.regulations.gov/OSHA-2021-0009-1070/attachment_1.pdf)

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MID WEST
FABRICATING CO.

October 2, 2023

Mr. Bruce E. Lundegren
Assistant Chief Counsel
SBA//Office of Advocacy
Bruce.Lundegren@sba.gov

Dear Sir;

Mid-West Fabricating Company appreciates the opportunity to provide input on the proposed OSHA Heat Injury and Illness Prevention Standard. In addition to our discussion on the SBREFA Panel in late September, we have the following input/concerns.

- **We support the final regulation requiring some element of employee responsibility.** Due to HIPPAA rules, there is no way for supervisors charged with overseeing team members to know of underlying conditions that may make an individual more susceptible to a heat related incident.
  - If an employee is aware of a medical condition that could make them vulnerable to a high heat incident, it should be mandated that an employee be required to alert supervisor(s) of potential complications when a heat advisory is activated.
  - Similarly, supervisors are not medically trained, and as stated frequently during the panel discussion – what may create a health-related problem for one person may not impact another at all.
  - What happens/who becomes liable when the worker refuses treatment, states they do not want to drink anymore, and/or states they are "fine" and then an incident occurs?
- What is the medical data to support the acclimatization schedule in the draft? As written, this will be burdensome and costly. Similarly, it's not clear what records would be required.
- Data gathering on incident days needs to be very clear. As written it's confusing and therefore potentially burdensome to implement.
- **We prefer a distinct standard for outdoor environments versus indoor environments.** This applies to the triggers and the recordkeeping required for each situation. Further, regional approaches are recommended as there are too many variables for a blanket standard.
- We believe the OSHA 300-Log is adequate for recording heat related injuries requiring medical care. Nothing additional should be required unless a company has a pattern of failing to protect its employees.
- **For our region of the country (Ohio) the trigger should be at least 90°F minimum for initial heat and 100°F for high-heat trigger.** As stated previously, we have zero

records of heat related injuries in decades of working in high heat and high humidity summers.

- Clearly define:
  - "Heat wave": Humidity should be considered for regions where this is a significant impact and concern with adjustments. If we are measuring the heat index and/or WBGT then why does it matter if there is a "Heat Wave" designated by the NWS?
  - "Suitably cool" is subjective.
- Contractor companies should be required to have plans in place for their personnel and not fall under our umbrella.
- **Exemptions should be allowed based on physical demand of work being done. Sedentary or light duty work is not addressed at all as written.**
- The Heat Illness and Injury Plan should be required to be updated to say compliant only. After injury/illness it should be reviewed, (but if it is compliant then should not need updating).
- **OSHA should develop a formula to calculate the reduction in cooling a human body gets based on air movement so employers could use this to calculate a heat index per person for a trigger if additional cooling/breaks are necessary.**
  - One listed engineering control is hood and insulation around heat generating sources – many of these systems are not designed for this type of modifications and the cost can be very expensive to re-engineer these systems.
  - Also, insulating the heat source can lead to premature degradation and failure of the equipment.
  - Location of rest break areas should not be defined by OSHA for indoor facilities as long as cool areas are available.
- Required "heat breaks" should be based on need and reasonable scientific data not a set time frame. *What happens if an employer is observing the 10 minutes/two hours rule and someone still has an issue?*
- Monitoring by supervisor should be dependent on the amount of time a supervisor can reasonably observe all employees under his/her responsibility. This can vary greatly within one building.
- If OSHA requires employers to identify a designated, trained person to ensure emergency procedures are invoked… what training would be required? The is unnecessary and a duplicated effort when supervisors and other team members are already trained.
- Standard should not require personnel be "cooled down before being transported". This decision should be left to a certified medical professional.

We appreciate the intent to protect workers from potential high heat hazards. However, a universal, blanket approach will create more problems than it solves. In this labor environment, the reality is that companies must keep employees happy, or they will simply leave. Working in unbearable conditions will not be tolerated. We look forward to continuing to assist in any way to create a regional format that meets the goals of industry and government alike.

Sincerely,
The Mid-West Fabricating Company

General Topics:

1. What types of occupations at your workplace do you consider outdoor occupations, and what percentage of your workforce falls into that category? What types of occupations at your workplace do you consider indoor occupations and what percentage of your workforce falls into that category?

Electrical Linemen, Meter Readers, Meter Techs, Substation Electricians, Tree Trimmers, Communication Techs, Water Distribution Ops

33%

Office staff, Facility Maintenance, Vehicle Maintenance, Warehouse personnel, Plant Maintenance, Electricians, Operators

67%

2. Consider employees at your workplace who work both indoors and outdoors; on average, how much time do they spend outdoors? How much time indoors? How much time indoors is next to process heat or heat-generating equipment?

We have many positions that work indoor/outdoor. It varies greatly and depends on what projects, maintenance, etc. is going on.

3. Are there certain work settings in which you are unsure if they would be considered outdoor work settings or indoor work settings? If so, what are they? What characteristics of that work setting make it hard to classify as solely indoor or outdoor?

NA – other than a lot of indoor/outdoor mixed.

4. What geographic regional differences should be considered or accounted for when determining the appropriate interventions and practices to prevent heat-related injuries and illnesses among workers?

Every situation and location are different.

5. Does your workplace currently implement any of the measures considered in the regulatory framework to prevent or mitigate heat-related injuries and illnesses among workers? If so, which measures have been the most effective?

Training and communication.

6. If you have mobile work sites, what difficulties do you encounter when trying to protect workers from hazardous heat? How do you deal with these challenges? OSHA is particularly interested in challenges that may be different than those faced in fixed work sites.

Employees not doing what they are supposed to or coming to work dehydrated from what they do on their personal time.

7. In Section III of the SER Background Document, OSHA has provided time and equipment estimates for different options that OSHA is considering for a potential heat standard. Are these estimates consistent with your experience?

Yes

8. If you were structuring a Heat Injury and Illness Prevention standard, what provisions do you believe are necessary? What provisions, if any, do you believe could be relaxed for certain groups, types, or sizes of entities?

Training and communication are key.

Allow flexibility. There are too many variables throughout industries. Depending on work, manpower, critical equipment such as utility power and water making it too restrictive will not work or be feasible.

9. Do you have any concerns about the feasibility of complying with any elements of the regulatory framework?

Yes, temperatures starting points are too low. They are set almost as low as controlled environments.

Supervision would be difficult when there are workers in the field and in customer homes and businesses.

Hourly temp tracking is not feasible. We currently use the maximum heat index for the day.

10. OSHA recognizes that there may be some language in the regulatory framework that may not be directly applicable to the operations of some industries within the contemplated scope. OSHA seeks input from SERs in helping identify such language.

11. How, and to what extent, would small entities in your industry be affected by a potential OSHA standard to protect workers from hazardous heat? Do special circumstances exist that make preventing heat-related injuries and illnesses in outdoor and indoor work settings more difficult or more costly for small entities than for large entities? Please describe these circumstances.

During utility storm restoration, vehicle accidents shutting roads down due to power lines, water main breaks, and other emergency work. Unloading rail cars due to railroad requirements and fines. When the power plant has emergency outage due to MISO requirements.

Scope:

12. OSHA has identified core industries as those that are likely to have an elevated risk of exposure to heat stress. Has OSHA overlooked any industries that should be included in the list of core industries? Are there industries that should be excluded from the list of core industries because they do not have an elevated risk? If so, please identify them and provide an explanation for inclusion/exclusion.

13. Should any types of employers or work settings or activities that are currently included in the contemplated scope of a heat standard be excluded? If so, please identify them and provide an explanation for why they should be excluded.

There should not be a one size fits all. Every job is different. Most organizations have done a very good job with this subject. They should be allowed to continue. Maybe making the standard more dynamic, by this is the scenario, how are you protecting the worker in this given situation. A few bad apples ruin it for everyone that is doing a good job. Employees must have some skin in the game as well. Some crews that are out in the field will do what they want until caught. You can have all the training and rules you want but they gamble and take short cuts. An employer cannot oversee them constantly.

14. OSHA is considering the following exemptions to the scope of a heat standard:

- Short duration exposures (e.g., 15 minutes of work in hazardous heat conditions every 60 minutes)

- Emergency operations, such as those already covered under 29 CFR 1910.156 or 29 CFR 1910.120

Expand for utilities. Many times, Emergency Services depend on the utilities.

- Work in spaces where mechanical ventilation keeps work areas below certain conditions (e.g., the ambient temperature of 80°F)

This should be raised to maybe 90 and depending what the humidity is.

- Work done from home (e.g., telework, remote, and hybrid employees)
- Sedentary or light activities performed indoors, if these are the only activities performed during the work shift OSHA is interested in receiving feedback from SERs on whether these settings should be in the scope of a potential standard.

3

Heat Injury and Illness Prevention Program:

15. If your workplace does not have an existing Heat Injury and Illness Prevention Program (HIIPP), how would you develop a HIIPP at your workplace? What steps would you take to develop the HIIPP? How long do you estimate that it would take to develop the HIIPP?

16. If your workplace has an existing HIIPP, what steps did you take to develop the HIIPP? Does your HIIPP include any of the elements discussed in Section II of the SER Background Document (page 10)? What steps would you have to take to update the HIIPP if OSHA adopted a heat standard? How long do you estimate that it would take to update the HIIPP?

It covers all elements.

Just some touch up, but it would need to be approved as it potentially would increase costs. I really need to see the final version.

17. The standard could require that employers involve employees in the development of the HIIPP. Have you ever involved employees in the development of any injury and illness programs/plans? If so, please describe the level of employee involvement and how it may have impacted the resulting program or plan.

Many times, Joint Labor Safety Committee and discussing the program with employees it will impact. That said, most employees will not be happy with more restrictions.

18. If you have implemented a HIIPP, in your experience, what elements of your company's HIIPP have been most effective in reducing heat-related injuries and illnesses at your workplace?

Communication of conditions and employees knowing they can stop work and break anytime, not just under these conditions. I don't know their body, only they do and everyone has different tolerances.

19. What metrics do you utilize to determine effectiveness of the HIIPP? Have you seen a reduction in the number or severity of heat-related injuries and illnesses? Which elements did not seem effective?

We have not had or have an issue with it.

20. Has your HIIPP reduced direct costs for your worksite (e.g., workers' compensation costs, fewer lost workdays) and indirect costs for your worksite (e.g., reductions in absenteeism and worker turnover;

increases in reported productivity, satisfaction, and level of safety in the workplace)? Please quantify these reductions, if applicable.

No, because we have not had issues with it.

Hazard Identification and Assessment:

21. If you conduct heat hazard identification and assessment at your workplace, how often is this conducted and how long does it take? What factors do you evaluate during the heat hazard identification and assessment?

New processes, but most work is done in the field, and we evaluate weather. Usually heat index. That goes for severe cold weather as well.

22. If you are currently monitoring heat conditions at your worksite(s), what kind of monitoring equipment do you use? How many units of equipment are used? How much does it cost to purchase the equipment? How much time does it take for each measurement? How often are heat conditions monitored at your worksite(s)?

Thermometers and humidity

23. Are there other factors that you consider for hazard identification and assessment, either for fixed or mobile work sites, that are not included in the regulatory framework? If so, what are they and why do you think they are important?

24. OSHA is considering permitting an employer to forgo tracking forecasts or taking measurements if the employer assumes that a work area meets or exceeds both heat triggers. Employers that elect to do this would not incur monitoring costs. These employers would still be required to comply with relevant control measures as though they took a measurement that meets or exceeds the heat triggers. Do you think you would be likely to elect this exception? Why or why not?

Yes, from past history and common sense, we know the areas that are a potential issue when the equipment is running. All other work sites are dependent on mother nature.

Engineering Controls:

25. What engineering controls are in place at your workplace to mitigate the impact of process heat or heat generated by equipment on worker exposure to heat?

Insulation, shielding, mister fans, fans, climate controlled break and control rooms.

26. If your company provides company-provided vehicles to any workers, what types of controls to mitigate heat exposure are available to workers while using the vehicles?

Al vehicles have AC and employees can break anytime they feel the need.

27. OSHA discusses potential options for engineering controls in Section II of the SER Background Document (pages 16-17). Do you currently utilize any of these controls at your workplace? Which of these controls do you find to be the most effective? How does the type of work site (indoor, outdoor, vehicles) impact the effectiveness of these controls?

Communication and culture is key. Employees knowing they can break anytime they want in the AC.

Water:

28. If you provide water coolers (with spigots) at outdoor worksites, how many coolers do you currently have and in what size? How many employees do these coolers accommodate?

At least 20. They are 3-5gallon. Power plant and field crews use them. Roughly 120.

29. In your workplace, how are you currently providing water to employees? What factors do you consider when determining the best method to provide suitably cool water that is easily accessible to employees? Does this differ for outdoor and indoor work settings?

Drinking fountains, Water cooler fill stations, water coolers, and we contract ice freezers that are stocked weekly at both our locations.

Protections for Unacclimatized Workers:

30. Are there different challenges and best practices for acclimatization in indoor work settings versus outdoor work settings? Are there unique concerns or approaches for implementing acclimatization for a small versus large business?

Our employees are each other's brother/sisters' keepers. They watch out for one another. We do instruct them to let a new person or returning employee to ease into the work.

31. What are the benefits and costs associated with acclimatization? Are there any challenges or barriers to providing workers with acclimatization?

For us no, but I can see it in other industries. You will probably have some not hiring during summer months due to costs and feasibility.

32. OSHA estimates that employers would assign workers to alternative tasks during some or all of the acclimatization process, which would temper the amount of lost work time. Would this be possible at your company? Why or why not?

No, all our employees are highly specialized and we would not necessarily have meaningful work for them.

33. If you implement acclimatization at your workplace, what process do you currently utilize? Do you provide heat acclimatization for new and returning workers? (Returning workers may be those returning from leave, an extended vacation, or a position where they were not exposed to heat.) How often and for how long are acclimatization protections implemented? What factors do you consider when determining the best method to provide acclimatization for your employees?

Rest/Work-Rest:

There are a lot of variables and really depends on the situation. Most of our work is short duration, so they have plenty of breaks.

34. Do you provide "meal breaks" to all employees? If so, how long are these breaks typically and are these "meal breaks" paid?

Some have a .5hr unpaid lunch, where others have a 15-minute paid lunch as part of their contract. They get many other breaks through the day as well.

35. Do you allow employees to take breaks other than a “meal break”? If so, how often and how long do employees take these breaks? Are these breaks (that are not a “meal break”) considered paid or unpaid time? Do you (the employer) decide how long/often the breaks can be, or can employees take breaks when they need to? Is there a total cap (or maximum) on the amount of time for these breaks (e.g., total amount of break time allowed per day)?

They get a 15-minute scheduled paid break mid-morning. That said there are many more breaks when they feel they need it or between jobs. No cap as long as we are completing work or it is needed due to safety reasons.

36. Do you modify your policy on breaks when it is a particularly hot day? If so, how do you define a “hot day”? When an employee takes a break, what strategies can/do they use to cool down on hot days?

It is discussed in job briefings to stress taking extra breaks. Try to move heavy work to different times.

37. Would it be feasible for you to allow employees to take breaks when they need to on hot days above a certain temperature? Why or why not? How about allowing employees to take 10-minute or 15-minute breaks at regular intervals, such as after every 2 hours of work, on hot days above a certain temperature? Why or why not?

For us it is feasible most of the time, except for emergency conditions as listed earlier. Other industries it is not always feasible.

Supervision/Observation:

38. How are employees supervised/observed when they are exposed to heat? Is there a specific trigger that is used to determine when supervision/observation is necessary?

Job briefings and plan the work. Some employees are out on their own. We try to keep communication with them, but it is not always possible due to being in other businesses and homes.

39. What are the best practices for supervising/observing employees for signs of heat-related injury and illness at your worksite(s)? How effective are the supervision/observation activities in preventing heat-related injury and illness in employees? Does this vary if employees are field-based and/or working at a decentralized location? How do employers deal with those challenges?

Training and communication are key. Only the employee knows their own body and health. Supervisors do what they can with breaks, and monitoring.

40. Employers may be required to maintain effective communication with employees whenever the initial heat trigger is met or exceeded. What methods of communication do you use?

Phone, radio, in-person. These are not always possible.

41. An option that OSHA is considering when temperatures exceed the high-heat trigger is to require a supervisor or designee to observe employees for signs and symptoms of heat-related injury and illness. What is the maximum number of workers that you think a supervisor or designee should be responsible for supervising/observing? Is your answer dependent on work setting?

This is not feasible. We have many workers all over town and the power plant and not enough supervisors to do this.

Other Administrative Controls:

42. In indoor environments, do you designate excessively high heat areas (e.g., those with ambient temperatures at or above 120°F)? If so, do you restrict access to those areas? How do you inform employees that an area is restricted due to increased risk of heat-related injury and illness? How do you monitor heat in these areas? Does this vary based on humidity levels?

We do not restrict areas, because it must be entered if something went wrong to correct operation or repair. We are placed in conservative mode during high temperature times by MISO as to not disrupt the electrical grid.

43. During high heat, do you adjust work requirements or procedures (e.g., work schedule, workload, work pace)? What methods do you find to be most effective?

We try to perform easier cooler work when possible.

Personal Protective Equipment:

44. Under what conditions do you provide cooling personal protective equipment (PPE) to mitigate heat stress to your employees? What kind of cooling PPE (e.g., cooling vests, wetted garments) do you provide?

We have tried vests, but employees do not like them. We hand out wetted garments, but most do not use them. We also provide Sqwincher popsicles besides water and sport drinks.

45. If you have employees that utilize PPE or clothing that contributes to heat stress (e.g., protective suits or coveralls), what procedures, if any, do you have in place to mitigate the employee's heat exposure?

I believe our largest exposure is the electrically qualified employees wearing arc rated clothing and electrically insulated gloves and sleeves. We try to schedule this work other times, but it is not always possible. We try rotating, but most want to complete the work. This is why they became linemen.

High-Heat Procedures:

46. When temperatures meet or exceed the high-heat trigger, OSHA is considering requiring employers to hold pre-shift meetings to address heat hazards. Do you currently hold pre-shift meetings? What types of information do you share during these meetings? Do they include topics specific to heat safety?

Yes, we already do this. We discuss the job plan, hazards associated with the job, and weather, which is part of the hazard assessment. Remediation methods are then discussed.

47. When temperatures meet or exceed the high-heat trigger, OSHA is considering requiring employers to notify employees of heat hazards and protective measures to be used. What do you find is the most effective way to notify employees of increased risks at the work site?

We plan for it by watching the weather and notify the staff the morning of and use as a job brief topic.

Medical Treatment and Heat-Related Emergency Response:

48. Do any of your injury and illness prevention programs/plans (not just heat-related) include emergency response procedures? If so, what type of emergency response procedures do you have in place? Would these procedures need to be modified to address heat injuries and illnesses?

No modification. Staff are trained in CPR, AED, Frist Aid. Any emergencies System Control is called on emergency number or radioed and they notify emergency services for paramedics.

49. What type of emergency response procedures do you have in place to respond to an employee beginning to show signs and symptoms of heat-related injury or illness? Do you have any protocols in place to determine whether and when they could resume work after cooling down?

Follow first aid training. Safety will evaluate and then determine if medical help is needed. If not, we would let them go back to the shop or go home for the rest of the day with instructions of resting and hydrating.

50. Do you have a designated person or persons who are charged with responding to emergency medical events at your worksite? What job title do they hold?

Safety & Training

51. Has your workplace ever had an incident of serious heat-related illness that required efforts to reduce an employee's body temperature, such as pouring water and ice directly onto the employee or placing the injured employee into an ice bath? If so, was this method effective?

No

Worker Training:

52. If you have an existing heat safety training program, what is the scope and format of your training program? Does your training program cover any of the topics listed in Section II of the SER Background document (pages 23-24)? If so, which of those topics have been most effective in reducing heat injuries and illnesses?

Covers all of it. We have not had an heat related incident due to communication and training.

53. Do all employees receive heat safety training? If not, how do you determine which employees receive training? Do all employees receive the same training? Do you provide additional heat safety training for supervisors?

All employees that do not work in a controlled environment.

54. Are workers in multi-employer work arrangements included in your heat safety training programs? How is training handled at multi-employer worksites?

No, this is their employer's responsibility. Although, if we see something we address it.

55. Do you provide heat safety training to employees in languages other than English? If so, how many languages do you currently provide training in and how do you determine which languages to provide?

English only, contractors that do not speak English are required to always have an interpreter.

56. How do you determine the duration and frequency of heat safety training? Does the duration and frequency of heat safety training depend on certain conditions (e.g., increased temperatures)? How many hours annually do employees spend participating in heat safety training?

Onboarding, annually, and awareness before big temperature changes.

Recordkeeping:

57. Do you maintain records on the heat conditions at your workplace? How often do you record heat conditions at your workplace?

No

58. OSHA is considering requiring employees to maintain additional records related to heat beyond what is already captured under the existing recordkeeping requirements, as discussed in Section II of the SER Background Document (page 25). Do you currently maintain any of these records (environmental monitoring data, heat-related illnesses and injuries including those that only require first aid, environmental and work conditions at the time of heat-related injuries or illnesses, and heat acclimatization for new and returning employees)? If so, please describe the process of collecting and recording this information. If you are not currently maintaining all record types, what steps would you need to take to prepare and maintain these additional records?

Yes, this would be part of our incident reporting system and OSHA Logs.

Communication on Multi-Employer Work Sites:

59. If any of your worksites have multiple employers, how do you currently communicate and coordinate with other employers at your establishment? Does this communication and coordination include information about heat-related hazards? If so, how frequent, and how long are these conversations?

NA

60. What are the current challenges in protecting workers in various types of work arrangements, including multi-employer work arrangements, from heat exposure?

Employees do what they are supposed to.

Employers in States with Existing Heat Standards:

61. If your business is in a state with an existing state heat standard, which elements of your state's heat standard do you believe have been effective in reducing workers exposure to heat? Which elements have not been effective? How has compliance with your state's heat standard affected your business's operations and finances?

NA

Beverage Concepts: Beer, Soda, and Liquor Equipment; Line Cleaning; CO2 & Beer Gas; Colas, Sodas, Juices & Bar Mixes, Energy Drinks, Smoothies, Slush Puppies

Fire Protection and General Fire Equipment: Fire Extinguishers, Fire Suppression, Sprinklers, Restaurant Hood Systems, Fire and Burglar Alarms, Emergency Lighting

Environmental Emergencies Policy

George A Kint, Inc strives for a safe and enjoyable work environment. Due to the nature of the jobs we perform, some of our work will expose us to various environmental hazards. These hazards can include exposure to temperature extremes, both natural and manmade; and possible contact with animals or insects capable of biting/stinging. Awareness of your environment and surroundings is key to help prevent medical emergencies that could potentially arise from these hazards. Weather related hazards and emergencies are easily mitigated with proper clothing, hydration, and rest. Each employee, manager, and supervisor shall be trained in how to handle and mitigate these potential hazards. Dispatchers and managers may be asked to reschedule appointments where weather related illnesses/injuries are more susceptible. This may include starting jobs earlier in the day during a heatwave or rescheduling an outdoor job during a cold snap to a warmer day. Every effort to convey these concerns with a customer should be made when scheduling. Dispatchers and managers must also take into consideration any personal factors that may increase the likelihood of a temperature-related emergency happening, such as the employee feeling ill or being injured. It is the responsibility of the employee to let their respective dispatchers and/or managers know when they are physically unwell; and it is the responsibility of the dispatchers and managers to make reasonable accommodations in those instances, to include, but not limited to, rescheduling the job or assigning another technician.

Heat Related Illnesses/Injuries

As the temperature increases, the need to monitor your body's reaction to it also increases. Heat-related illnesses can occur rapidly in temperatures that may not seem to be excessively hot, generally beginning with a heat index around 85 degrees Fahrenheit. We also perform work in factories with high heat-producing machinery up to 140 degrees Fahrenheit, and commercial kitchens with temperatures in excess of 100 degrees Fahrenheit. Your body has natural defense mechanisms to help battle heat, such as sweat and thirst. The more you sweat, the more water is being expelled from your body. This will cause you to be thirsty. Your body is asking you to drink something and replenish those lost fluids. Failure to do so will result in dehydration. The body will begin protecting the vital organs by diverting fluids from other parts of the body. Once dehydration begins, the only thing you can do to reverse it or stop it is to drink fluids, or in severe cases, have them replenished intravenously. Water is readily available at the

office and customers are required to grant you access to it at their facilities. Carry a reusable water container, preferably one that is insulated, with you always.

On hot days, or when working in environments that produce high temperatures year-round in an indoor setting, you must be proactive in drinking fluids to prepare for the loss of fluids. Sweating is a good thing. It allows your body to cool itself. Keeping yourself hydrated will allow the body to continue to produce sweat. You should also monitor your urine output and its color. Urine should be clear or light yellow. Yellow, dark yellow, or mustard colored urine is a sign of a potential emergency. Urine frequency should also remain the same or increase during high temperature conditions.

Proper hydration should be more than just water when available. As you sweat, you are also losing key nutrients such as magnesium, potassium and sodium, as well as electrolytes. Electrolytes help regulate chemical reactions within the body and maintain the balance between fluids inside and outside your cells. They are also responsible for the electrical charges that affect your muscle contractions. Therefore, you cramp up in the early stages of dehydration. Drinking a combination of water and electrolyte boosting drinks, such as Gatorade, will help prevent dehydration and its associated health problems. Eating bananas, pickles, or other snacks with moderate magnesium, potassium, and/or sodium content will provide even more protection. Being proactive is always better than being reactive.

There are three stages to heat related illnesses/injuries:

- Heat cramps
- Heat exhaustion
- Heat stroke

Heat cramps are exactly what they sound like. This is the beginning stage of dehydration and a potentially more serious illness/injury. Your body has lost sufficient amounts of fluid and electrolytes. It is now overcompensating for that loss. At this stage, you can still fix the problem by drinking water and/or some form of electrolyte-containing drink. Now would be a good time to eat a banana, pickle, or a handful of lightly salted chips. If you begin to experience cramps or unusual achiness in your muscles, stop what you're doing. Take a break and drink/eat something. Find a cool, shaded place if outside, or a cool air-conditioned room if inside. Once you feel better (usually within a few minutes), you can continue to work. At this point, take more frequent breaks if needed to continue to keep yourself hydrated appropriately. Take a 15-minute break at least every two hours or more frequently as needed.

Heat exhaustion is the next progression of the body shutting down. Signs and symptoms of heat exhaustion may include, but not be limited to, fatigue, headaches, nausea, excessive sweating, dizziness, lightheadedness, decreased urine output, yellow colored or darker colored urine, and cramping. You should immediately stop what you are doing and find a cool place to take refuge in. If able to do so, you should lay down. You should also slowly begin drinking water or some other electrolyte replenishing drink. Do not drink anything rapidly. Take small sips instead. Heat exhaustion will take a little longer to recover from. Take sufficient time to properly cool and hydrate your body. This could take 10-30 minutes. If this will adversely affect the job or your schedule, please contact dispatch immediately and let them know what is going on. Also make sure your contact at the job is aware of the situation. When safe to do so, you may continue to work. Slowing your pace, drinking more fluids, and taking more frequent breaks may be necessary. Heat exhaustion is a serious situation and needs to be treated as such. You should

also advise the safety officer of both the location and Kint if this occurs. This should be done as soon as possible.

Finally, **heat stroke** is a life-threatening medical emergency. Signs and symptoms of heat stroke include, but are not limited to, loss of consciousness, disorientation, a lack of sweating, elevated body temp, dizziness, severe cramping, minimal urine output, dark yellow to mustard brown colored urine, and seizures. 911 should be called immediately. If you are experiencing heat stroke, you may not be able to help yourself at this point. If you are still able to do so, you should remove yourself to a cool room. You will need to rapidly cool your body temperature. A spray bottle with cool (not cold) water can be sprayed on your body. Start with the head/neck and wrists. Also spray the armpits, and if possible, the groin. These areas of the body are like thermometers for the body. These areas will help begin the cooling process more rapidly. Do not use cold or ice water for cooling. Cooling the body too fast can present other challenges. Placing a wet towel on the back of your neck will help. Only drink fluids or ingest anything orally if you are alert enough to do so. Taking anything orally when disoriented or not fully alert can lead to a choking hazard. Rehydration from heat stroke often requires fluids intravenously. However, if you are able to drink you should. Drink slowly. Never chug a beverage in this condition. Recovery from heat stroke will vary for each individual. You should only continue if you are absolutely certain you can continue safely. You should also notify dispatch and the customer's point of contact as soon as physically able or have someone else contact them for you. Recovery from heat stroke could take in excess of an hour. You will also need to report this to the customer's safety officer and Kint's safety officer.

Remember, be proactive and not reactive. Always try to prevent getting to the heat cramp stage. Do not allow yourself to get past the heat cramp stage. Drink plenty of fluids. Avoid caffeine, energy drinks, and carbonated beverages as they will increase the dehydration process. Avoid drinking alcohol the night before you will be working in a hot environment. Monitor your urine output throughout the day for color and frequency. Slow your pace and take more frequent breaks in a cool shaded place if necessary. Remove PPE if it is safe to do so, or if your health due to a heat-related emergency demands it. You may also request the customer provide someone to monitor you. Customers are also required to provide you with shade, water, or an air-conditioned room as needed. You may also use your air-conditioned company vehicle as a place of refuge from the heat. It is the employee's responsibility to inform dispatch and/or your manager if you are unable to perform your duties. If you are not fit to work in a hot environment, whether indoors or outdoors, you need to convey that to your dispatcher/manager. Reasonable accommodation will be provided to help you perform your duties, if possible, by your manager. Strenuous activities and labor-intensive activities, such as outdoor installations or prolonged proximation to high heat-producing machinery can exacerbate the heat illness paradigm. When possible, these activities should be performed in moderation (slower than normal), and in extreme circumstances, rescheduled as necessary. You know your body better than anyone else. Show up fit, ready to work, and take the precautions necessary to protect your body.

Cold Related Illnesses/Injuries

As temperatures begin to drop below 50 degrees Fahrenheit, the potential for cold temperature related illnesses/injuries increases. Cold weather emergencies are not exclusive to cold temperatures. Wet clothing being worn in temperatures in excess of 70 degrees Fahrenheit can cause cold related

emergencies. As your body's core temperature drops, it begins to redirect blood to the vital organs. This means that blood flow to your outer extremities is the first thing to be affected. This in turn makes your fingers, toes, ears, and nose susceptible to frostbite. Wearing appropriate clothing and accessories will help prevent this from happening. Again, be proactive and not reactive.

The two primary cold related illnesses/injuries are frostbite and hypothermia. Frostbite occurs when exposed skin is subjected to subfreezing temperatures. The colder the temperature, the faster this can occur. Working outside in freezing temperatures, or inside in refrigerated warehouses or storage buildings, can be an issue in our line of work. The simplest form of protection is to wear the appropriate clothing and layers of clothing. Since body heat is expelled most rapidly from the head, a winter cap or beanie is the best line of defense in keeping the core temperature up. A full ski mask for extreme cold is recommended. Gloves and wool socks offer the best protection for the hands and feet respectively. Wool socks, or socks that are designed to wick moisture away from the skin, help keep your feet warm and dry. Properly insulated boots work well too. These are available as steel toe or composite toe options but generally won't have a high insulation rating. Maintaining a warm core temperature will greatly reduce the risk of frostbite. Limiting the exposure time will help as well. Work at intervals that you are comfortable with. Retreat to a warm area. Do not ever rub your hands, feet, ears, or nose if they show signs of frostbite. Frostbite will present itself as waxy, white or yellowish skin that is stiff to the touch. If you press your skin, it will feel more rigid and not compress like it normally would. Ice crystals have formed in the tissue just under the skin. Rubbing these areas can cause permanent damage. Remove any cold, constricting apparel and jewelry. You can warm the affected areas with a warm, dry blanket or towel. Notify your customer's safety officer and dispatch of what has occurred. When able to do so, notify the safety officer at Kint. Whereas moisture is your friend in warm weather, the exact opposite is true in cold weather. Moisture will intensify the effects of the cold, as will the wind if outside.

When the body's core temperature drops below 95 degrees Fahrenheit, hypothermia begins. Your body will begin shivering as a natural defense mechanism. The body has already begun to shift blood from the extremities to the vital organs. This will make you more susceptible to frostbite. If the body's core temperature drops below 93 degrees Fahrenheit, moderate hypothermia begins to set in. At this point, shivering will slow or stop. Your body will ramp up directing blood flow from all extremities to the vital organs. You will have a decreased level of consciousness, become confused, have slurred speech, and be drowsy. Your pulse and respiration will decrease. If your core temperature reaches 91 degrees or less, you are now in the advanced stages of hypothermia. Without immediate correction, death is imminent.
You need to begin warming up as soon as possible. The downside here is that in most cases of hypothermia, you are not cognitive enough to do this on your own. For this reason, you should take a break when shivering has become uncontrollable, or as frequently as needed depending on severity of the cold temperatures. Retreat to a warm, dry area and warm yourself until the shivering has stopped. If you have any layers that have gotten wet, now would be a good time to change them out if possible.
Always carry an extra layer or two with you. Resume work when you have stopped shivering and/or removed the items which exacerbated the cold. Drinking warm or room temperature liquids is recommended if you are lucid enough to do so.

Bites/Envenomations

While not entirely common in our line of work, bites, stings, and envenomations can occur while performing our job duties. Bees and spiders can be found in extinguisher hoses and covers as often as they're found around our vehicles and work areas. Some of our employees may even encounter larger animals such as dogs during our daily routines. The first step into eliminating or reducing these types of incidents is situational awareness. Look around you for the potential hazards. Are there webs near your job area? Is there a beehive on the fascia at the dock you're working at? Are you doing an inspection outdoors? Does your client have any pets? Noticing these things can help prepare you for the potential of something to come and heighten your situational awareness. You should be on the lookout for environmental hazards regardless of whether you are indoors or outdoors. If you have any type of allergies to a bite/sting/plant, you should be prepared for it should it occur, but more importantly, avoid the occurrence if possible.

If you are allergic to bees, you should have an EpiPen just in case. But, if you're allergic to bees, and you see a hive near an area you're about to work, you should avoid that area and seek assistance removing the threat if possible. If you're inspecting busses in a field, and hear a rattling sound coming from the bus you're approaching, do you keep walking or stop? If you hear, see, or smell a hazard, STOP! Evaluate the situation, formulate a plan, and proceed when safe to do so. Prevention is your first line of defense. Here's what to do if you are bitten or stung.

Spider bite- There are five spiders common to this area that could potentially bite you and be poisonous. They are the yellow sac spider (NJ), brown recluse spider (DE, NJ, PA), wolf spider (NJ, PA), black widow spider (DE, MD, NJ, PA), and the southern black widow (PA). You should familiarize yourself with what they look like and their habitats. Apart from the yellow sac spider in NJ, they all have poisonous bites. The yellow sac spider is also aggressive in biting humans. The other four spiders are considered less aggressive. They also prefer dark hiding places, whereas the yellow sac spider can be found on ceilings, behind paintings, or shelves. If unsure of the type of spider, seek medical attention if bit. Be aware of any symptoms that seem unusual such as vomiting, difficulty breathing, severe pain at the site, muscle rigidity, headache, or decreased level of consciousness.

Snake bite- There are three venomous snakes in the quad state region. They are the timber rattlesnake, eastern massasauga, and copperhead. Western PA is the only area you will find the eastern massasauga and it is a water snake. Since snakes are cold-blooded, they will generally be shaded on hot days, and "sunbathing" on cooler days seeking warmth. They do not pose a threat in wintertime. If you are bitten by one of these, you must seek immediate medical attention. While waiting for a higher level of care, address the wound with soap and water if available. Remove any restrictive clothing or jewelry. Never apply a tourniquet. Watch for the unusual signs listed above, as well as bruising at the site.

Tick bite- Tick bites can occur in just about any setting, but are more common in the outdoors, and particularly wooded or high grass settings. They are most active in the spring through fall; however, it is not uncommon to encounter them in milder winters. Ticks will burrow their heads under the skin of their prey. They can be removed by grabbing the head and pulling straight up. Lyme disease is associated with certain tick bites. You should be aware of a bullseye ring around the bite location. Seek medica l attention if this occurs.

Domestic animal bite- Generally speaking, cat and dog bites are not harmful. There is always the slim potential that they could be a carrier of rabies, but it is not common nor likely. The bite can be addressed by controlling any bleeding, cleaning the wound with soap and water, hydrogen peroxide, or an alcohol wipe, and bandaging the site. Whenever possible, you should ask if the animal is current on its rabies shots. If uncertain, seek medical attention.

Wild animal bite- Bat, coyote, fox, raccoon, and skunk bites have the highest potential of rabies. These are not animals we should be encountering, but the potential exists. Contact 911 and advise them of the bite and request an animal control officer. Address the wound by controlling bleeding with direct pressure, washing it with soap and water, and monitoring any unusual signs or symptoms as previously notated.

Bee sting- Possibly the most common hazard we face, a bee sting is rarely harmful unless the person being stung is allergic or stung in a sensitive area. Extra caution should be used to watch for unusual symptoms for up to 30 minutes after a bee sting. If the stinger is visible, remove it by scraping it with a credit card or similar type item. Wash the affected area with soap and water. If you are allergic to bees, make sure you have your EpiPen handy or send someone to get it for you. Seek medical attention as needed.

With any of the emergencies listed above, the customer needs to be notified, as well as dispatch. The customer's safety officer and the safety officer for Kint must be made aware as well. Never take any emergency for granted. Be certain of your well-being before continuing to perform your duties. Be proactive to your safety, not reactive.

Heat Injury & Illness Prevention in Outdoor and Indoor Work Settings

Small Business Advocacy Review (SBAR) Questions

OSHA is considering promulgating a new standard to protect indoor and outdoor workers from hazardous heat. OSHA has convened a Small Business Advocacy Review (SBAR) Panel under the Small Business Regulatory Enforcement Fairness Act. The SBAR Panel has several purposes. The Panel provides an opportunity for affected small employers to provide comments in advance of a formal rulemaking process. After reviewing OSHA's potential options for the various elements of a proposed heat standard and estimates of the potential impacts of those options, Small Entity Representatives (SERs) can offer recommendations to the Panel on ways to tailor the standard to make it more cost-effective and less burdensome for affected small entities while still ensuring workers are adequately protected. Early comments permit identification of additional options or alternatives to the regulatory framework for the Panel to consider. Additionally, SERs can provide specific recommendations for the Panel to consider on issues such as reporting requirements, timetables of compliance, and whether some groups or industries should be exempt from all or part of the standard. A final report containing the findings, advice, and recommendations of the Panel will be submitted to the Assistant Secretary of Labor for Occupational Safety and Health to help inform the agency's decision making with respect to this possible rulemaking.

In this document, the SBAR Panel presents a list of questions organized by areas of particular interest to the agency. The Panel is seeking SER input on each of these topics. SERs may choose to answer any or all questions and should feel free to bring up any additional issues that they would like the Panel to consider.

General Topics:

1. What types of occupations at your workplace do you consider outdoor occupations, and what percentage of your workforce falls into that category? What types of occupations at your workplace do you consider indoor occupations and what percentage of your workforce falls into that category? 70% indoor and 30% outdoor for extinguisher inspections, 90% indoor and 10% outdoor for beverage technicians, and 80% indoor and 20% outdoor for system inspections/installations.
2. Consider employees at your workplace who work both indoors and outdoors; on average, how much time do they spend outdoors? How much time indoors? How much time indoors is next to process heat or heat-generating equipment? Probably an 80/20 split. Between 40 and 50% is indoor near process heat/heat-generating equipment.
3. Are there certain work settings in which you are unsure if they would be considered outdoor work settings or indoor work settings? If so, what are they? What characteristics of that work setting make it hard to classify as solely indoor or outdoor? No.
4. What geographic regional differences should be considered or accounted for when determining the appropriate interventions and practices to prevent heat-related injuries and illnesses among workers? All geographical regions should be considered, along with their climate type. Every region is going to be acclimated to different temps and climates. There is no one size fits all temp here.
5. Does your workplace currently implement any of the measures considered in the regulatory framework to prevent or mitigate heat-related injuries and illnesses among workers? If so, which measures have been the most effective? We provide training and expectations of breaks when needed.

6. If you have mobile work sites, what difficulties do you encounter when trying to protect workers from hazardous heat? How do you deal with these challenges? OSHA is particularly interested in challenges that may be different than those faced in fixed work sites. Virtually all of our work is at other locations. We have to trust our clients are compliant.

7. In Section III of the SER Background Document, OSHA has provided time and equipment estimates for different options that OSHA is considering for a potential heat standard. Are these estimates consistent with your experience?

8. If you were structuring a Heat Injury and Illness Prevention standard, what provisions do you believe are necessary? What provisions, if any, do you believe could be relaxed for certain groups, types, or sizes of entities? Break requirements, a right to stop work when a certain threshold is reached. Education and training are a must.

9. Do you have any concerns about the feasibility of complying with any elements of the regulatory framework? Numerous. Many of our technicians work alone. We can't suddenly start doubling up techs on jobs because of weather. There are many other concerns.

10. OSHA recognizes that there may be some language in the regulatory framework that may not be directly applicable to the operations of some industries within the contemplated scope. OSHA seeks input from SERs in helping identify such language.

11. How, and to what extent, would small entities in your industry be affected by a potential OSHA standard to protect workers from hazardous heat? Do special circumstances exist that make preventing heat-related injuries and illnesses in outdoor and indoor work settings more difficult or more costly for small entities than for large entities? Please describe these circumstances.

Scope:

12. OSHA has identified core industries as those that are likely to have an elevated risk of exposure to heat stress. Has OSHA overlooked any industries that should be included in the list of core industries? Are there industries that should be excluded from the list of core industries because they do not have an elevated risk? If so, please identify them and provide an explanation for inclusion/exclusion. I'm curious how this will affect UPS and FedEx drivers, as well as dock workers for transportation companies.

13. Should any types of employers or work settings or activities that are currently included in the contemplated scope of a heat standard be excluded? If so, please identify them and provide an explanation for why they should be excluded.

14. OSHA is considering the following exemptions to the scope of a heat standard:
    - Short duration exposures (e.g., 15 minutes of work in hazardous heat conditions every 60 minutes)
    - Emergency operations, such as those already covered under 29 CFR 1910.156 or 29 CFR 1910.120
    - Work in spaces where mechanical ventilation keeps work areas below certain conditions (e.g., the ambient temperature of 80°F)
    - Work done from home (e.g., telework, remote, and hybrid employees)
    - Sedentary or light activities performed indoors, if these are the only activities performed during the work shift

    OSHA is interested in receiving feedback from SERs on whether these settings should be in the scope of a potential standard.

Heat Injury and Illness Prevention Program:

15. If your workplace does not have an existing Heat Injury and Illness Prevention Program (HIIPP), how would you develop a HIIPP at your workplace? What steps would you take to develop the HIIPP? How long do you estimate that it would take to develop the HIIPP? I plan to develop one after this session, taking into account your input and our scope of work. I imagine it will take a day or two.
16. If your workplace has an existing HIIPP, what steps did you take to develop the HIIPP? Does your HIIPP include any of the elements discussed in Section II of the SER Background Document (page 10)? What steps would you have to take to update the HIIPP if OSHA adopted a heat standard? How long do you estimate that it would take to update the HIIPP?

17. The standard could require that employers involve employees in the development of the HIIPP. Have you ever involved employees in the development of any injury and illness programs/plans? If so, please describe the level of employee involvement and how it may have impacted the resulting program or plan. We use a safety committee, followed by management approval, and presentation to the employees before final draft and implementation.
18. If you have implemented a HIIPP, in your experience, what elements of your company's HIIPP have been most effective in reducing heat-related injuries and illnesses at your workplace?

19. What metrics do you utilize to determine effectiveness of the HIIPP? Have you seen a reduction in the number or severity of heat-related injuries and illnesses? Which elements did not seem effective?

20. Has your HIIPP reduced direct costs for your worksite (e.g., workers' compensation costs, fewer lost workdays) and indirect costs for your worksite (e.g., reductions in absenteeism and worker turnover; increases in reported productivity, satisfaction, and level of safety in the workplace)? Please quantify these reductions, if applicable.

Hazard Identification and Assessment:

21. If you conduct heat hazard identification and assessment at your workplace, how often is this conducted and how long does it take? What factors do you evaluate during the heat hazard identification and assessment?

22. If you are currently monitoring heat conditions at your worksite(s), what kind of monitoring equipment do you use? How many units of equipment are used? How much does it cost to purchase the equipment? How much time does it take for each measurement? How often are heat conditions monitored at your worksite(s)?

23. Are there other factors that you consider for hazard identification and assessment, either for fixed or mobile work sites, that are not included in the regulatory framework? If so, what are they and why do you think they are important?

24. OSHA is considering permitting an employer to forgo tracking forecasts or taking measurements if the employer assumes that a work area meets or exceeds both heat triggers. Employers that elect to do this would not incur monitoring costs. These employers would still be required to comply with relevant control measures as though they took a measurement that meets or exceeds the heat triggers. Do you think you would be likely to elect this exception? Why or why not?

Engineering Controls:

25. What engineering controls are in place at your workplace to mitigate the impact of process heat or heat generated by equipment on worker exposure to heat?

26. If your company provides company-provided vehicles to any workers, what types of controls to mitigate heat exposure are available to workers while using the vehicles?

27. OSHA discusses potential options for engineering controls in Section II of the SER Background Document (pages 16-17). Do you currently utilize any of these controls at your workplace? Which of these controls do you find to be the most effective? How does the type of work site (indoor, outdoor, vehicles) impact the effectiveness of these controls?

Water:

28. If you provide water coolers (with spigots) at outdoor worksites, how many coolers do you currently have and in what size? How many employees do these coolers accommodate?

29. In your workplace, how are you currently providing water to employees? What factors do you consider when determining the best method to provide suitably cool water that is easily accessible to employees? Does this differ for outdoor and indoor work settings?

Protections for Unacclimatized Workers:

30. Are there different challenges and best practices for acclimatization in indoor work settings versus outdoor work settings? Are there unique concerns or approaches for implementing acclimatization for a small versus large business?

31. What are the benefits and costs associated with acclimatization? Are there any challenges or barriers to providing workers with acclimatization?

32. OSHA estimates that employers would assign workers to alternative tasks during some or all of the acclimatization process, which would temper the amount of lost work time. Would this be possible at your company? Why or why not?

33. If you implement acclimatization at your workplace, what process do you currently utilize? Do you provide heat acclimatization for new and returning workers? (Returning workers may be those returning from leave, an extended vacation, or a position where they were not exposed to heat.) How often and for how long are acclimatization protections implemented? What factors do you consider when determining the best method to provide acclimatization for your employees?

Rest/Work-Rest:

34. Do you provide “meal breaks” to all employees? If so, how long are these breaks typically and are these “meal breaks” paid? 30 minutes

35. Do you allow employees to take breaks other than a “meal break”? If so, how often and how long do employees take these breaks? Are these breaks (that are not a “meal break”) considered paid or unpaid time? Do you (the employer) decide how long/often the breaks can

be, or can employees take breaks when they need to? Is there a total cap (or maximum) on the amount of time for these breaks (e.g., total amount of break time allowed per day)? Breaks other than meal are taken as needed and paid.

36. Do you modify your policy on breaks when it is a particularly hot day? If so, how do you define a "hot day"? When an employee takes a break, what strategies can/do they use to cool down on hot days? We modify for both hot and cold weather.

37. Would it be feasible for you to allow employees to take breaks when they need to on hot days above a certain temperature? Why or why not? How about allowing employees to take 10-minute or 15-minute breaks at regular intervals, such as after every 2 hours of work, on hot days above a certain temperature? Why or why not? I don't understand this. We're already responsible to provide 2 15 min breaks and a 30 min meal break. That doesn't provide for additional breaks. Are you not required to provide the 2 15s and a 30?

Supervision/Observation:

38. How are employees supervised/observed when they are exposed to heat? Is there a specific trigger that is used to determine when supervision/observation is necessary? The techs are generally operating self-supervised.

39. What are the best practices for supervising/observing employees for signs of heat-related injury and illness at your worksite(s)? How effective are the supervision/observation activities in preventing heat-related injury and illness in employees? Does this vary if employees are field-based and/or working at a decentralized location? How do employers deal with those challenges?

40. Employers may be required to maintain effective communication with employees whenever the initial heat trigger is met or exceeded. What methods of communication do you use? We send out an email prior to days where the temps will exceed 85 or drop below 20, with instructions on how to mitigate hazards associated with those temps.

41. An option that OSHA is considering when temperatures exceed the high-heat trigger is to require a supervisor or designee to observe employees for signs and symptoms of heat-related injury and illness. What is the maximum number of workers that you think a supervisor or designee should be responsible for supervising/observing? Is your answer dependent on work setting?

Other Administrative Controls:

42. In indoor environments, do you designate excessively high heat areas (e.g., those with ambient temperatures at or above 120°F)? If so, do you restrict access to those areas? How do you inform employees that an area is restricted due to increased risk of heat-related injury and illness? How do you monitor heat in these areas? Does this vary based on humidity levels? We access areas up to 140 degrees and as low as -30 degrees. Most often, it is a limited exposure time.

43. During high heat, do you adjust work requirements or procedures (e.g., work schedule, workload, work pace)? What methods do you find to be most effective? 85 degrees is the constant whether it is indoors or outdoors.

Personal Protective Equipment:

44. Under what conditions do you provide cooling personal protective equipment (PPE) to mitigate heat stress to your employees? What kind of cooling PPE (e.g., cooling vests, wetted garments) do you provide? We don't. We instruct employees to use whatever means they prefer to stay cool.

45. If you have employees that utilize PPE or clothing that contributes to heat stress (e.g., protective suits or coveralls), what procedures, if any, do you have in place to mitigate the employee's heat exposure?

High-Heat Procedures:

46. When temperatures meet or exceed the high-heat trigger, OSHA is considering requiring employers to hold pre-shift meetings to address heat hazards. Do you currently hold pre-shift meetings? What types of information do you share during these meetings? Do they include topics specific to heat safety?

47. When temperatures meet or exceed the high-heat trigger, OSHA is considering requiring employers to notify employees of heat hazards and protective measures to be used. What do you find is the most effective way to notify employees of increased risks at the work site?

Medical Treatment and Heat-Related Emergency Response:

48. Do any of your injury and illness prevention programs/plans (not just heat-related) include emergency response procedures? If so, what type of emergency response procedures do you have in place? Would these procedures need to be modified to address heat injuries and illnesses?

49. What type of emergency response procedures do you have in place to respond to an employee beginning to show signs and symptoms of heat-related injury or illness? Do you have any protocols in place to determine whether and when they could resume work after cooling down?

50. Do you have a designated person or persons who are charged with responding to emergency medical events at your worksite? What job title do they hold?

51. Has your workplace ever had an incident of serious heat-related illness that required efforts to reduce an employee's body temperature, such as pouring water and ice directly onto the employee or placing the injured employee into an ice bath? If so, was this method effective?

Worker Training:

52. If you have an existing heat safety training program, what is the scope and format of your training program? Does your training program cover any of the topics listed in Section II of the SER Background document (pages 23-24)? If so, which of those topics have been most effective in reducing heat injuries and illnesses? It's an 11 min video and quiz, discussion, OSHA flyers posted.

53. Do all employees receive heat safety training? If not, how do you determine which employees receive training? Do all employees receive the same training? Do you provide additional heat safety training for supervisors? Office personnel are not required to train at this time.

54. Are workers in multi-employer work arrangements included in your heat safety training programs? How is training handled at multi-employer worksites? Our policies are to be followed unless the client's policy supercedes ours.

55. Do you provide heat safety training to employees in languages other than English? If so, how many languages do you currently provide training in and how do you determine which languages to provide?

56. How do you determine the duration and frequency of heat safety training? Does the duration and frequency of heat safety training depend on certain conditions (e.g., increased temperatures)? How many hours annually do employees spend participating in heat safety training? It is reviewed once per year.

Recordkeeping:

57. Do you maintain records on the heat conditions at your workplace? How often do you record heat conditions at your workplace?

58. OSHA is considering requiring employees to maintain additional records related to heat beyond what is already captured under the existing recordkeeping requirements, as discussed in Section II of the SER Background Document (page 25). Do you currently maintain any of these records (environmental monitoring data, heat-related illnesses and injuries including those that only require first aid, environmental and work conditions at the time of heat-related injuries or illnesses, and heat acclimatization for new and returning employees)? If so, please describe the process of collecting and recording this information. If you are not currently maintaining all record types, what steps would you need to take to prepare and maintain these additional records?

Communication on Multi-Employer Work Sites:

59. If any of your worksites have multiple employers, how do you currently communicate and coordinate with other employers at your establishment? Does this communication and coordination include information about heat-related hazards? If so, how frequent, and how long are these conversations?

60. What are the current challenges in protecting workers in various types of work arrangements, including multi-employer work arrangements, from heat exposure? We only know maybe 5% of our clients' policies on any topic.

Employers in States with Existing Heat Standards:

61. If your business is in a state with an existing state heat standard, which elements of your state's heat standard do you believe have been effective in reducing workers exposure to heat? Which elements have not been effective? How has compliance with your state's heat standard affected your business's operations and finances?

From:	Kenneth Goss
To:	OSHA Events DSG
Cc:	Bruce.Lundegren@sba.gov
Subject:	RE: Thank You—Heat Injury & Illness SBREFA
Date:	Wednesday, September 20, 2023 9:56:15 AM
Attachments:	Environmental Emergencies Policy.pdf

Good morning,
Thank you again for the opportunity to be a part of the teleconference call on Monday. It was very informative, and I enjoyed getting to hear the perspectives of everyone on the call.
I know the phrase “one size fits all” was echoed throughout the presentation. I suspect the other sessions probably shared that same sentiment. I also believe that we all genuinely want a commonsense standard that is flexible enough for every business type to meet. I honestly don’t know if that is possible.

Just briefly, I wanted to explain what we do here at George A Kint, Inc. We are a 3rd generation family owned and operated business providing fire protection services to the eastern half of Pennsylvania and parts of Delaware, Maryland, and New Jersey. We also have a beverage concepts side of the business providing beer/soda line installation and cleaning, CO2 and syrup delivery, Slush Puppie service, and other miscellaneous services. We started as a beverage company in 1954. Local businesses and fire departments would bring their CO2 cylinders and extinguishers into us to be refilled and serviced, and thus the fire protection side of the company was born. Beverage works primarily indoors in bar and kitchen environments. The beverage technicians are probably exposed more to cooler conditions such as coolers, walk-in refrigerators, and basements. That said, they are subject to the conditions of commercially operated kitchens, and the heat they produce, as well. The fire protection side is a completely different beast. Fire technicians work indoors and outdoors. They can be exposed to warehouse freezers with temps as low as -30 degrees Fahrenheit, or manufacturing facilities with blast furnaces producing nearby ambient temperatures in excess of 140 degrees Fahrenheit. Outdoor jobs then expose technicians to the elements, which here in Pennsylvania typically range from the teens to mid-90’s. Given that the majority of our work is performed at our customers’ facilities, we don’t have much control over what happens out in the field. I have attached our safety policy regarding environmental emergencies. The idea was to tackle both cold and heat in one policy, as well as envenomations that can occur indoors and outdoors. We try to stress the importance of what to do with each emergency and how to mitigate it.
Below are the bulletins that I had noted from reading the proposed standard:

- Since the majority of our work is performed off-site, can we provide an insulated, reusable water bottle for technicians to be able to obtain water from customers’ facilities? I think most of our techs bring coolers to work, such as myself, but for those that don’t, giving them a water bottle seems better than giving them bottles of water that would get warm sitting in their vehicles all day.
- What obligation do our clients have to contractors performing work at their location? We

assume they are following OSHA standards, but my personal experience is many only follow some of them. In reviewing one of our larger client's policies recently, they discuss that break rooms and certain facilities are for employees only. However, if that is the only air-conditioned room in the facility, are they going to deny access to our technician in a heat-related medical emergency?

- How does the proposed requirements for SSE and RTW employees apply when our exposure varies? I did mention this at the end of the teleconference. Any of our technicians could be on a job that exposes them to high-heat one day, and then not go on another one for days, if not weeks, unless the weather is the reason for the heat exposure. To me, there is no rhyme or reason to that proposal in terms of setting limits. That said, I would strongly recommend that in construction environments or where an employee is operating high heat producing equipment or machinery, language states that those employees should be monitored more closely during the first few days of their return to work. In the case of SSEs, they should be monitored period. I struggle to find a scenario where an SSE should be operating alone without a mentor or trainer. In our situation, more thought could be given on whom we are sending out to what jobs given the situation.
- Should we require client supervision in high-heat related job situations and/or require 2 technicians per job in those situations? I can assure you that there are many times when we simply cannot spare two techs on a job. If necessary, we can reschedule but we're at the mercy of the client in that event. Assuming everyone follows the proposed standard, this shouldn't be an issue. However, we know that won't be the case. We expect our employees to follow the safety policy set forth and ask the host facility to provide someone to escort our tech in extreme situations.
- Prospectus on a cold weather injuries/illnesses standard? My opinion is addressing cold and heat go hand in hand. Both can, and have been proven, to be deadly. I did a job in Wamsutter Wyoming once where the temp was -23 degrees with a wind chill of -59 degrees. It was so cold that three of us rotated in 5-minute shifts operating the pump so that the pump operator could get 10 minutes to thaw out. Your hand would literally freeze to the position you had it in on the pump handle. We were not allowed to rig something to the handle to keep the pump running for obvious safety reasons.
- Will the standard address our right to request on-site temperature monitoring at frequently visited clients where indoor heat exposure is prevalent? We perform fire extinguisher inspections at foundries, quarries, commercial kitchens, warehouses with both cold and heat extremes, processing plants with both indoor and outdoor requirements, industrial paint booths, and numerous other cold and heat producing facilities. We can certainly ascertain the heat indices at outdoor jobs, but it becomes trickier at indoor facilities.
- Isn't 2 15-minute breaks and one minimum 30-minute break the standard? I've always been under the impression that this was a labor requirement. If that is the case, then what additional precautions are actually being taken per high-heat procedures set forth on page 37? We try to make it clear that you break as needed and the general time it should take to recover given the significance of the heat emergency. But again, everyone is different. There simply isn't a one size fits all when it comes to the human body. We all react differently to everything. Employers can't be held to set time guidelines anymore than an employee can be held to a set recovery time.
- Being proactive in preventing heat cramps and heat exhaustion through training and cleaning

up the written medical treatment. At 104 degrees Fahrenheit, you have roughly 30 minutes to cool a hyperthermic patient. Rapid cooling is required; however, you must be mindful to not cool the patient too quickly. It mentioned about having 15 pounds of ice on hand and submerging heat patients in an ice bath. If you want to put a patient into shock or create other complications then by all means, do that. It is more likely that ice packs or wet towels rags will be readily available in the event of an emergency. Teaching employees and management where the body's natural thermometers are is the safer pre-hospital treatment option. Placing a towel wrapped ice pack on the groin, neck, wrists, armpits, and temples will cool a patient at a quick, safe speed. In the hospital setting, they can cool a patient much more rapidly because they have the equipment necessary to handle the side effects of cooling someone too rapidly, and even they would only do that in a life-threatening situation. Every first-aid kit should have cold and hot compresses. Every employer should have a first-aid kit.

Again, I want to thank you for your time and consideration of all our talking points. We trust that you will use them to create a standard that works for everyone, that doesn't place any additional burden on some more than others, and most importantly, reduces heat-related work injuries.

Kenneth Goss
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From: OSHA Events DSG <OSHAEvents_DSG@dol.gov>
Sent: Monday, September 18, 2023 2:33 PM
Cc: Bruce.Lundegren@sba.gov
Subject: Thank You—Heat Injury & Illness SBREFA

Hello,

Thank you for participating in today's Small Business Regulatory Enforcement Fairness Act (SBREFA) session on a potential heat injury and illness prevention standard. We greatly appreciate you volunteering your time and providing valuable input and feedback on the potential impacts of a standard on small businesses.

We encourage you to submit written comments and answers to any or all of the questions attached. In addition, based on feedback during the session, we invite you to submit any current plans that incorporate heat injury and illness prevention as examples of how you are already employing some of these practices.

All such comments and information can be submitted via the government's e-regulatory portal, www.regulations.gov, at OSHA-2021-0009-1059, or via email to OSHAEvents_DSG@dol.gov and Bruce.Lundegren@sba.gov. Information collected from the SBREFA sessions and your written comments will be used by the SBAR Panel to develop a report to present to the Assistant Secretary of Labor for Occupational Safety and Health. Submitted comments must be submitted by October 3, 2023 (or earlier, if possible), which is two weeks after the last SBREFA session, in order for the Panel to complete its report within the time limits specified by SBREFA.

Thank you again, and please let us know if you have any additional questions.

Directorate of Standards and Guidance
Occupational Safety and Health Administration

October 2, 2023

TO: Occupational Safety and Health Administration (OSHA): OSHAEvents_DSG@dol.gov
Bruce Lundegren, Office of Advocacy, Small Business Administration (SBA), Bruce.Lundegren@sba.gov

Submitted via e-mail

Subject: Follow Up to OSHA's Small Business Regulatory Enforcement Fairness Act (SBREFA) Panels on *Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings*

The Industrial Fasteners Institute (IFI) had two member companies participate in the September 2023 SBREFA Panels: Genevieve Gurnick-Long of Seaway Bolt & Specials Corporation and Jennifer Johns Friel of Mid West Fabricating Company. These comments are a summary of the key issues covered during the panel discussions, and IFI's general position on OSHA's work in this area.

- In general, IFI does not believe an indoor heat standard is necessary. The fastener industry has no history of heat-related issues, which is a direct result of the steps fastener manufacturers take to protect their employees and ensure customers' needs are met. IFI members address heat issues in a variety of ways, including altered shift times, frequent water breaks and cold treats on extremely hot weather days. Furthermore, the labor market is such that if a manufacturer does not provide adequate protections and employee monitoring for potential heat issues, workers will find another employer.

- Many manufacturers including IFI members are facing an acute skilled workforce shortage. At small facilities, the absence of even one highly valued team member is already leading to production challenges that must be managed appropriately. For larger companies, even losing 1% of a production team has operational consequences given the specialized nature of a skilled manufacturing worker. IFI members are already experiencing workforce disruptions and shortages and an onerous, difficult to achieve indoor heat standard will only further exacerbate an already stretched supply chain.

- A "one size fits all" indoor heat standard will be very difficult for most manufacturers like IFI members to implement. Manufacturing facilities are often older and not designed to be temperature controlled. Installing and operating newly installed cooling systems to reach an arbitrary indoor temperature would be expensive, and in some factories impossible, in an industry with incredibly tight operating margins and fixed contracts with customers. In addition, the current labor shortages make cross-training and rotating staff from certain jobs difficult to impossible. IFI members utilize a variety of tools such as hydration breaks, fans and altered shift times to manage indoor heat issues. It should be noted that employees are often offered extra hydration breaks but an employer cannot force the employee to drink.

- The fastener industry does not experience heat illness incidences in spite of process-related heat areas on factory floors. The lack of substantiated risk in the fastener industry should mean that a mandatory standard is unnecessary. OSHA should focus its efforts on industries that are having heat-related injuries.

- Members of the fastener industry have heat illness prevention plans in place and conduct annual training programs with refreshers as needed that protect employees from excessive heat while allowing operations to continue.

- Training programs include onboarding education, ongoing education, and employee communication materials (video boards, clock-in reminders, daily safety talks, pamphlets, etc.). Supervisors receive additional training.

- Both fastener companies on the panel stressed that employees are allowed breaks at any time with no retaliation, and water, electrolyte drinks, access to cool areas, and fans are all offered to employees.

The following overall concerns with the proposals in the OSHA proposed framework were expressed by Ms. Gurnick-Long and Ms. Friel during the panel discussions. If either of them have additional information beyond what was covered in the panel meeting, they will submit them individually.

- The proposed temperature triggers of 80 and 87 degrees are too low. Any triggers should start at no lower than 90 degrees.

- The acclimatization proposals are overly burdensome for new employees and employees returning to work after vacations.

- Misters are not appropriate for factory floors where they can create a slip hazard and potentially damage machinery.

- Cooling vests and neck coolers create unintended consequences and should not be mandated.

- Monitoring and recordkeeping for compliance could be very difficult to achieve when you have different temperatures in different areas of a factory.

- Industrial controls can be difficult to install in some factories, expensive, and many are still experiencing supply chain issues.

IFI appreciates the opportunity to provide members for the SBREFA panel process. IFI continues to believe that a mandated standard is unnecessary for our industry. If OSHA should issue a proposed rule, then we urge the agency to include maximum flexibility for regions of the country and individual industry sectors.

Please contact Jennifer Baker Reid, IFI's Washington Representative, at jreid@thelaurinbakergroup.com with any questions.

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To: stone.jessica@dol.gov

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Joshua.j.brammer@omb.eop.gov

Cc: Martha.Duggan@nreca.coop

RE: OSHA's SBREFA Panel on Heat Injury and Illness – further information from Sulphur Springs Valley Electric Cooperative

Ms. Stone, Mr. Lundegren and Mr. Brammer,

Thank you for the recent opportunity to serve as a Small Entity Representative on the SBREFA Panel on Heat Injury and Illness.

I appreciate your willingness to hear and consider the views of the electric cooperative industry.

As I indicated, Sulphur Springs Valley Electric Cooperative (SSVEC) is the local utility for 42,000 member owners in Arizona. We deliver electricity over 4,100 miles of distribution facilities with the assistance of a field workforce of 80 employees. Over the past 10 years, we have had 1 reportable incident related to heat, despite average temperatures that range from 95 to 105 in the summer months.

I want to underscore some of the points I made on the panel.

1. If OSHA proceeds with a heat standard, the scope should be limited to those industries that have high incident rates of heat illness. Electric cooperatives should be exempt from the requirements of a new standard, based on the industry's superior record with regard to heat incidents.
2. The proposed language on what may be required in a Heat Injury and Illness Prevention Program mirrors what is already in SSVEC's annual heat safety training and also in our written Job Hazard Analysis. I would support the first review option – "Whenever necessary to ensure its ongoing effectiveness."
3. On Hazard Identification and Assessment, it is my view that a requirement to record temperatures is burdensome – there are several authoritative sources the industry uses to assess heat hazards. For example, the utility industry is very focused on National Weather Service reporting.
4. The Initial and High-Heat Triggers suggested by OSHA in Table 1 are well below what our region would consider to be a heat hazard. I suspect it will be difficult to define a one-size fits all trigger as weather varies so drastically across the country.
5. The Engineering and Administrative controls listed by OSHA reflect elements of what is already contained in our annual heat training and job hazard analysis, with the exception of the

proposed acclimatization methods. SSVEC provides breaks, rest, shade, water and access to air-conditioned trucks as needed by the employees. During the summer months, we routinely alter work schedules to avoid the highest heat of the day. Our managers, foremen, and journeymen linemen serve as Qualified Observers who are responsible for identifying hazards, including heat, for crews working at or near energized lines. Our annual heat training and biennial first aid training includes how to respond to heat emergencies. We have not found a need to provide acclimatization to new or returning employees. New employees have typically performed the work in similar weather, either as part of a training program or for another employer. In short, SSVEC, has already adopted programs and training to address high heat hazards. It is our conclusion that the programs must be working, as the industry has had very few reportable heat incidents. To codify this in regulation would be duplicative and create administrative and economic burdens for member-owned cooperatives.

For all the reasons demonstrated above, I hope that OSHA will recognize the superior results of the electric cooperative industry in dealing with heat issues.

Again, thank you for the opportunity to participate and I am happy to answer any further questions you may have.

Sincerely,
Nathan Hodges
Vice President of Operations
Sulphur Springs Valley Electric Cooperative

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October 2, 2023

Mr. Douglas L. Parker
Assistant Secretary
Occupational Safety and Health Administration
200 Constitution Ave NW
Washington, DC 20210

Submitted Electronically via regulations.gov

RE: Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings: Docket ID No. OSHA-2021-0009-1059

Dear Assistant Secretary Parker:

On behalf of the North American Die Casting Association ("NADCA" or "Association"), please accept these comments on the Small Business Advocacy Review (SBAR) Panel materials for the Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings potential standard.

NADCA is the sole trade and technical association of the die casting industry, representing members from over 350 companies located in every geographic region of the United States. Die casters manufacture a wide range of non-ferrous castings, from automobile engine and transmission parts to intricate components for missile systems, computers, and medical devices.

Two association members participated in the recent SBREFA sessions with a representative of Fort Recovery Industries on the September 12 session and a Twin Cities Die Castings Company representative on the September 18th session. A common theme clearly emerged from all six of the SBREFA events – a one-size-fits-all approach to a proposed rule cannot work and many industries already have procedures in place to create and maintain a safe work environment. An OSHA heat rule that mandates the same procedures and reporting requirements across all sectors will not prove effective for many industries, and the die casting industry is a prime example.

By the very nature of the industry, the use of heat is irreplaceable in the process of melting metal, often at temperatures up to 2,000 degrees Fahrenheit. Eliminating heat from a die casting facility in the U.S. will result in the inability to manufacture critical components for industries from auto and aerospace to defense and medical devices and both, oil & gas and renewable energy – and lead the U.S. to rely on foreign manufacturers to import these components.

All NADCA members already have procedures in place to maintain a safe work environment that accounts for the heat generated through the manufacturing process. Many members report incorporating procedures related to heat in their formal safety plans. As a clear demonstration of the effectiveness of these procedures, in a review of available OSHA data, NADCA members reported zero fatalities.

NADCA believes that a nation-wide indoor heat rule is unnecessary for improving the safety of employees in the die casting industry, and were OSHA to move forward, the agency should exempt industries such as die casting that without heat cannot manufacture a product.

Below please find responses on behalf of NADCA members to specific questions posted to SERs:

> *2. Consider employees at your workplace who work both indoors and outdoors; on average, how much time do they spend outdoors?*

The vast majority of members report indoor-only work other than occasional maintenance and material handling and loading.

> *4. What geographic regional differences should be considered or accounted for when determining the appropriate interventions and practices to prevent heat-related injuries and illnesses among workers?*

NADCA members, including those with facilities in multiple states, report vastly different approaches in those regions. In many southern states, NADCA members report a higher tolerance for heat due to natural acclimatization, whereas some in a few northern states indicated they may take additional steps on certain days in the summer. The type of heat is also of critical consideration, as members report a significant difference between dry heat in certain states and the humidity in others. Therefore, NADCA believes a local or regional approach with employers relying on a Heat Advisory from the National Weather Service is more reflective of the local environment.

> *5. Does your workplace currently implement any of the measures considered in the regulatory framework to prevent or mitigate heat-related injuries and illnesses among workers? If so, which measures have been the most effective?*

- Fans at individual workstations and large floor stand fans are effective in some facilities.
- Often, die casting facilities have large "garage" type doors that open to allow natural ventilation.
- Members report break rooms and/or office areas with air conditioning that are accessible at all times to all employees.
- Central air conditioning or installation of equipment to foster air circulation has not proven effective in achieving the temperature levels mentioned in the Framework and is not feasible in the die casting industry.
- Installation of over-machine exhaust fans or other engineering control to capture the heat is often not feasible as die casters typically install cranes above the machine that are fixed in place.
- Most die casting operations already have exhaust fans in their facility.
- Die casters have fixed heat-generating sources in all their facilities and members report that the installation of waste heat recovery systems are largely ineffective, and heat barriers are not standard industry practice as they are ineffective or not feasible.

> *8. If you were structuring a Heat Injury and Illness Prevention standard, what provisions do you believe are necessary? What provisions, if any, do you believe could be relaxed for certain groups, types, or sizes of entities?*

- A plan should include recommendations based on best practices already in use.
- Those with existing plans report they undertake an annual review; a periodic review for those with plans is likely necessary.

- Members also use warning signs posted in high-heat areas and typically restrict access to the areas near machinery holding or processing molten metal.
- Flexibility to customize based on industry and regional location.
- Training employees new to the industry to recognize heat as a hazard and signs of heat stress.

9. Do you have any concerns about the feasibility of complying with any elements of the regulatory framework?

Several recommendations or options presented in the Framework are either not technologically feasible or ineffective in achieving the intended goal. It is not feasible to reduce the ambient temperature near a die casting machine, furnace, or foundry to 80 degrees Fahrenheit.

Many companies report running "4-10" shifts, meaning they have a single work shift of ten hours, four days a week. Although as-needed and additional breaks are provided on high-heat days, mandating ten or fifteen-minute breaks every two hours is not a realistic option as it would not only cause disruption to the manufacturing process but could force an employee to leave a workstation or prematurely shut down a machine in order to take the forced break.

It is also not feasible in the die casting industry to assign a new employee alternative tasks during acclimatization time periods as prescribed in the Framework. Machine operators do not have "back office" roles, nor are there other tasks for which they are hired that the employee can perform – therefore, die casters would simply send the person home without pay or focus instead on hiring individuals already in the industry to avoid the disruption, which will have broad consequences to the workforce and future of die casting, including the further exploration of automation to replace workers subject to the regulation.

Mechanical ventilation as indicated is not feasible in the workstation near a machine that is melting metal at up to 2,000 degrees Fahrenheit. In addition, those who have attempted to install ventilation systems, including air conditioning, report that not only is the investment ineffective, but resulted in the increased use of energy and emissions.

Water bottles are not permitted at certain die casting industry workstations at most facilities and no liquid of any kind is permitted near molten metal as even the smallest amount of water could result in a catastrophic event, including the explosion of the facility. Members have also reported the bottles themselves are also a hazard, falling on the floor and even onto conveyor belts and into the machinery.

11. How, and to what extent, would small entities in your industry be affected by a potential OSHA standard to protect workers from hazardous heat? Do special circumstances exist that make preventing heat-related injuries and illnesses in outdoor and indoor work settings more difficult or more costly for small entities than for large entities? Please describe these circumstances.

Smaller manufacturers will face an outsized burden when faced with their larger competitors. One die casting member reported receiving a quote for more than $500,000 for an initial setup and reconfiguration of the facility to reduce the heat. In addition, the company was told that annual costs could exceed several hundreds of thousands of dollars a year. Small entities in an industry such as die casting with narrow profit margins lack the available capital to make the required investments suggested in the Framework.

13. Should any types of employers or work settings or activities that are currently included in the contemplated scope of a heat standard be excluded? If so, please identify them and provide an explanation for why they should be excluded.

OSHA should exempt industries that require process heating with no alternatives to manufacture the product. For thousands of years, casting of metal has involved heat to manufacture a product, a process that will still require heat for thousands of years to come. Industries such as die casting take unique and specific steps to ensure a safe work environment for employees. While heat may factor into other occupations due to natural outdoor temperatures, a die casting plant specifically increases the heat in order to manufacture the product. All employees entering the industry are made very well aware that heat is not incidental, but essential, to operations in a die casting facility.

> *14. OSHA is considering the following exemptions to the scope of a heat standard: Short duration exposures (e.g., 15 minutes of work in hazardous heat conditions every 60 minutes).*

Yes, OSHA should exempt short duration exposure, though few of the occupations in die casting would fall under this category outside of periodic loading and unloading of product and materials.

> *15. If your workplace does not have an existing Heat Injury and Illness Prevention Program (HIIPP), how would you develop a HIIPP at your workplace? What steps would you take to develop the HIIPP? How long do you estimate that it would take to develop the HIIPP?*

Small entities in particular would rely upon third parties to help develop a plan. No NADCA member interviewed as part of preparing these comments believed that they could create a plan from scratch. All entities reported needing either outside counsel, a firm specializing in this area, or assistance from their national association or other form to provide a template that can be customized and verified by an outside entity.

Members strongly disagree with estimates OSHA provides and zero members believe drafting a policy from scratch will take at least forty hours and likely multiple weeks, with one company estimating at least two weeks, or eighty hours, to develop a plan. The OSHA estimations fundamentally do not understand the nature of a small business, which often does not have a full-time human resources employee until they reach 35-50 full-time employees.

A template provided by OSHA is not sufficient for all industries. While some companies do report using OSHA posters, including the “urine test”, for the die casting industry a generic template will not translate to the unique manufacturing environment and process for this industry. In addition, any template, not only would require customization, but review by outside legal counsel, which will require additional resources from small businesses.

> *16. If your workplace has an existing HIIPP, what steps did you take to develop the HIIPP? Does your HIIPP include any of the elements discussed in Section II of the SER Background Document (page 10)? What steps would you have to take to update the HIIPP if OSHA adopted a heat standard? How long do you estimate that it would take to update the HIIPP?*

Members report that those who have an existing plan that incorporates heat would require well in excess of the OSHA estimated time to update such a plan. Members believe that at least 1-2 weeks are required, in addition to the time and expense of outside counsel reviewing the company’s plan.

> *17. Have you ever involved employees in the development of any injury and illness programs/plans?*

Yes, many firms report having a safety committee that includes employees involved in various parts of the operation and in different job functions.

> *18. If you have implemented a HIIPP, in your experience, what elements of your company's HIIPP have been most effective in reducing heat-related injuries and illnesses at your workplace?*

The die casting industry already implements multiple procedures to ensure a safe and productive work environment. These procedures are proven successful by the lack of recordable instances of a heat-related fatality. NADCA members report multiple factors that continue to lead to the success of a safe work environment, including, but not limited to PPE such as providing cold/wet towels, electrolyte popsicles, and cold electrolyte drinks and cold water.

> *19. What metrics do you utilize to determine effectiveness of the HIIPP? Have you seen a reduction in the number or severity of heat-related injuries and illnesses? Which elements did not seem effective?*

NADCA members who have a plan and those who have procedures in place without a formal heat plan report no reduction in the number or severity of heat-related injuries and illnesses as NADCA members do not report having heat-related incidents in their facilities as the companies have had procedures in place for many years.

> *22. If you are currently monitoring heat conditions at your worksite(s), what kind of monitoring equipment do you use? How many units of equipment are used? How much does it cost to purchase the equipment? How much time does it take for each measurement? How often are heat conditions monitored at your worksite(s)?*

Continuous manual measurement is not feasible in the die casting industry. One NADCA member defined as a small business estimates it would take twenty FTE hours each week to monitor temperatures periodically at various workstations in their facility. Another member reports using the NIOSH heat tool app that supervisors download and use on their personal phones. Others mount thermometers and hygrometers in various locations in the facility. Many die casters would likely have to invest financially in a system to automatically monitor the temperature at workstations, a cost small businesses will find challenging.

> *24. OSHA is considering permitting an employer to forgo tracking forecasts or taking measurements if the employer assumes that a work area meets or exceeds both heat triggers. Employers that elect to do this would not incur monitoring costs. These employers would still be required to comply with relevant control measures as though they took a measurement that meets or exceeds the heat triggers. Do you think you would be likely to elect this exception? Why or why not?*

Due to the time-consuming nature and little value added of manually checking the temperature at workstations, pending input from counsel, many die casting companies would likely concede that they do have high heat areas in their facilities in order to forgo the expense and lost personnel resources to monitor and possibly record the data.

> *25. What engineering controls are in place at your workplace to mitigate the impact of process heat or heat generated by equipment on worker exposure to heat?*

Exhaust fans, natural ventilation by opening of large doors, and other means to move air out of the facility. Fans at personal workstations when feasible. Heat guards on some machines if possible.

29. In your workplace, how are you currently providing water to employees? What factors do you consider when determining the best method to provide suitably cool water that is easily accessible to employees?

Water bottles are not permitted at certain die casting industry workstations at most facilities and no liquid of any kind is permitted near molten metal as even the smallest amount of water could result in a catastrophic event, including the explosion of the facility. Members have also reported the bottles themselves are also a hazard, falling on the floor and even onto conveyor belts and into the machinery. Many facilities report placing water stations throughout the facility and all provide access to cold water and/or electrolytes in the breakroom.

30. Are there different challenges and best practices for acclimatization in indoor work settings versus outdoor work settings? Are there unique concerns or approaches for implementing acclimatization for a small versus large business?

Employees entering or returning to work in the die casting industry are well aware of the work environment that requires exposure to high heat in conditions that in certain circumstances and locations can exceed 120 degrees. Employers provide training and other information to ensure the safety of employees, actions proven effective by the lack of recorded fatalities due to heat among NADCA members. Requiring time off from work for weather acclimatization will have an outsized impact on smaller manufacturing operations that rely on their workforce to meet customer demands and compete globally. Small manufacturers under thirty-five employees often lack a full-time Human Resources professional and could rely upon a single supervisor or general manager for the entire facility. Adding acclimatization requirements will only increase the burden on small businesses without improving workplace safety.

31. What are the benefits and costs associated with acclimatization? Are there any challenges or barriers to providing workers with acclimatization?

There are significant costs and challenges associated with acclimatization in the die casting industry that would act as a deterrent for workers to enter careers in the industry. Hourly employees would not receive pay while being "acclimatized" to the work environment and employers will not pay an individual for what is essentially unpaid time off.

32. OSHA estimates that employers would assign workers to alternative tasks during some or all of the acclimatization process, which would temper the amount of lost work time. Would this be possible at your company? Why or why not?

This is not an option in the die casting industry as a machine operator or other employee in the die casting facility itself has no other job task that they can perform outside of that workstation. The employer cannot temporarily assign them to an "office job" as the company hired that individual to perform a specific task. NADCA members will not pay this hourly employee during the acclimatization process as they will not have a job function during this time.

33. If you implement acclimatization at your workplace, what process do you currently utilize? Do you provide heat acclimatization for new and returning workers? (Returning workers may be those returning from leave, an extended vacation, or a position where they were not exposed to heat.) How often and for how long are acclimatization protections implemented? What factors do you consider when determining the best method to provide acclimatization for your employees?

No, die casters do not implement acclimatization procedures, do not inquire about the location an employee visited during their time off, nor factor in the duration of their leave.

> *34. Do you provide "meal breaks" to all employees? If so, how long are these breaks typically and are these "meal breaks" paid?*

Yes, NADCA members report providing paid meal breaks, which typically last twenty to thirty minutes.

> *35. Do you allow employees to take breaks other than a "meal break"? If so, how often and how long do employees take these breaks? Are these breaks (that are not a "meal break") considered paid or unpaid time? Do you (the employer) decide how long/often the breaks can be, or can employees take breaks when they need to? Is there a total cap (or maximum) on the amount of time for these breaks (e.g., total amount of break time allowed per day)?*

Yes, NADCA members report providing two 15-minute breaks in addition to the twenty-to-thirty-minute meal break to employees, with all three breaks being paid.

> *36. Do you modify your policy on breaks when it is a particularly hot day? If so, how do you define a "hot day"? When an employee takes a break, what strategies can/do they use to cool down on hot days?*

Some NADCA members report providing an additional break of up to fifteen minutes in a cool area such as the breakroom. Companies do not report having a set temperature that defines a "hot day". A few indicated that they review the National Weather Service Heat Advisories, and others indicate they use the "real feel" in weather apps at the start of the day.

> *37. Would it be feasible for you to allow employees to take breaks when they need to on hot days above a certain temperature? Why or why not? How about allowing employees to take 10- minute or 15-minute breaks at regular intervals, such as after every 2 hours of work, on hot days above a certain temperature? Why or why not?*

Yes, NADCA members report that they already provide breaks as needed in addition to the twenty-to-thirty-minute meal and two 15-minute breaks provided. Employers in this industry already recognize the high-heat environment in which they operate and implement administrative controls such as allowing additional breaks as needed.

> *38. How are employees supervised/observed when they are exposed to heat? Is there a specific trigger that is used to determine when supervision/observation is necessary?*

Several NADCA members state that they use a "buddy system" where employees monitor new employees. Some have said they train supervisors on heat exposure and prevention. Prior to hiring, most prospective employees are given a tour of the facility and made aware of the high heat conditions ahead of hiring. Other than onboarding a new to the industry employee, there is not a specific trigger.

> *40. Employers may be required to maintain effective communication with employees whenever the initial heat trigger is met or exceeded. What methods of communication do you use?*

Companies running a single shift a day find communication easier with employees prior to the start of the workday. However, facilities running multiple shifts cannot easily communicate en masse. Most communication is verbal.

> *41. An option that OSHA is considering when temperatures exceed the high-heat trigger is to require a supervisor or designee to observe employees for signs and symptoms of heat-related injury and illness. What is the maximum number of workers that you think a supervisor or designee should be responsible for supervising/observing? Is your answer dependent on work setting?*

Small manufacturers such as those who make up the NADCA membership cannot spare the time of an existing supervisor to continuously observe employees throughout the shift. It is not feasible given the layout of the facilities and time required for a supervisor to continuously monitor employees. As previously mentioned, even monitoring temperatures at workstations could cost twenty hours per week in lost productivity due to the time it would take for temperature checks. Employees in the industry are made aware that they have the ability to take breaks as needed.

> *42. In indoor environments, do you designate excessively high heat areas (e.g., those with ambient temperatures at or above 120°F)? If so, do you restrict access to those areas? How do you inform employees that an area is restricted due to increased risk of heat-related injury and illness? How do you monitor heat in these areas?*

Yes, access is restricted in most NADCA member facilities to high-heat areas, including the melt room. Signs are posted to make employees and visitors aware.

> *43. During high heat, do you adjust work requirements or procedures (e.g., work schedule, workload, work pace)? What methods do you find to be most effective?*

A few companies said that they start shifts earlier in some months, beginning at 5:00 AM and concluding at 2:00 PM to minimize employee exposure to heat in the afternoon hours. Companies also report providing additional breaks of 10-15 minutes in a separate cooled area.

> *44. Under what conditions do you provide cooling personal protective equipment (PPE) to mitigate heat stress to your employees? What kind of cooling PPE (e.g., cooling vests, wetted garments) do you provide?*

Some have found cooling towels effective, while others state the water and perspiration are not conducive to the work environment and/or not effective. Chilled/cooled bandanas work well, cold packs are provided as needed. Of all NADCA members providing input, none found cooling vests effective as employees reported they are too heavy and cumbersome. Access to cold electrolytes through liquid or popsicles are also made available. Mobile spot air conditioners are ineffective.

> *45. If you have employees that utilize PPE or clothing that contributes to heat stress (e.g., protective suits or coveralls), what procedures, if any, do you have in place to mitigate the employee's heat exposure?*

Employees at many workstations are required to wear PPE, including protective covering and at times face shields. Some of the required protective coverings protect workers from radiant heat. The same aforementioned administrative and engineering controls are utilized to mitigate the employee's heat exposure.

> *46. When temperatures meet or exceed the high-heat trigger, OSHA is considering requiring employers to hold pre-shift meetings to address heat hazards. Do you currently hold pre-shift meetings? What types of information do you share during these meetings? Do they include topics specific to heat safety?*

Companies running a single shift a day find it easier to hold a pre-shift meeting, which many do. However, facilities running multiple shifts cannot easily hold pre-shift meetings. Alternatively, some members have weekly staff meetings.

> *52. If you have an existing heat safety training program, what is the scope and format of your training program? Does your training program cover any of the topics listed in Section II of the SER Background document (pages 23-24)? If so, which of those topics have been most effective in reducing heat injuries and illnesses?*

Some report a half-hour training for new hires and a half-hour of annual recurring training. Others state that they provide one hour of video and other program training.

> *57. Do you maintain records on the heat conditions at your workplace? How often do you record heat conditions at your workplace?*

No members report that they keep a record of temperatures in their workplace.

> *58. OSHA is considering requiring employees to maintain additional records related to heat beyond what is already captured under the existing recordkeeping requirements, do you currently maintain any of these records (environmental monitoring data, heat-related illnesses and injuries including those that only require first aid, environmental and work conditions at the time of heat-related injuries or illnesses, and heat acclimatization for new and returning employees)? If you are not currently maintaining all record types, what steps would you need to take to prepare and maintain these additional records?*

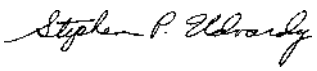
NADCA members report that they do not generally maintain heat records related to temperature in the facility. The establishment of a program would take considerable time to create and implement. One member of a typical size estimated losing twenty hours of full-time equivalent work each week with manual monitoring and reporting. Others indicated that the installation of an automated system is costly and does not increase workplace safety.

> *61. If your business is in a state with an existing state heat standard, which elements of your state's heat standard do you believe have been effective in reducing workers exposure to heat? Which elements have not been effective? How has compliance with your state's heat standard affected your business's operations and finances?*

A member in Minnesota reported that they had to hire an outside consultant to comply with that state's heat standard. Few, if any, die casters would seek to implement a HIIPP without the assistance of a third-party consultant. This added cost is significant and implementing many of the consultants' recommendations can run in the hundreds of thousands of dollars, without achieving the stated goals.

Thank you for the opportunity to submit these comments and we look forward to continuing to work with you on this proposed rule.

Sincerely,



Stephen P. Udvardy
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September 29, 2023

Mr. Bruce E. Lundegren
Assistant Chief Counsel
SBA/Office of Advocacy
409 Third Street, SW
Washington, DC 20416

Dear Mr. Lundegren,

Thank you for the opportunity to serve as a Small Entity Representative (SER) for The Small Business Advocacy Review (SBREFA) Panel for the proposed Heat Injury & Illness Prevention in Outdoor and Indoor work settings. I am Manager of Meadow Farmers Co-op Gin in Meadow, Texas. We operate a Cotton Gin, which processes seed cotton from local growers and produces finished lint cotton bales for the textile industry. This facility is a cooperative owned by our local grower members. Cotton ginning season starts at cotton harvest. Harvest season in Texas usually starts in July in the lower Rio Grande Valley and continues north where it starts in October in West Texas. Generally, most facilities operate for three to four months each year. During the off season, we employ four people to repair the processing equipment. During a normal ginning season, we employ an additional 15-30 people for the operation of the facility. In the 21 years I've managed Meadow Farmers Co-op we have had no heat-related illnesses or injuries.

The cotton ginning process includes drying of excess moisture and cleaning of plant material from the seed cotton. Seed is then removed from the lint, followed by further cleaning of the lint which is then packaged in a cotton bale. This is all done with mechanical processing equipment, burners and fans. In the off season, temperatures are different depending on the location in the state, but it can and does get hot. We work with our crews, allowing them the flexibility to perform more physical tasks that may expose them to heat in the cooler morning hours and other "less hot" tasks in the afternoon. We also allow our workers to vary shift times to accommodate working during cooler portions of the day. The off season is for repairs to equipment so changing tasks and taking breaks as a result of temperature changes is recognized as part of the job.

The operating season usually lasts three to four months. During this time, we typically operate 24 hours a day, seven days a week. While the facility is operating, most employees have rather repetitive jobs. The work basically occurs as each bale is produced. For example, the employee

closing and tagging cotton bales will do this task and then wait for the next bale. This basically results in short activities with breaks in between tasks throughout the day. If an equipment breakdown occurs and help is needed to correct the issue, the shift supervisor will task some employees to assist. The breakdowns can be short or long and depend greatly on the situation. During breakdowns, tasks can be significantly more difficult. Employees may need breaks more often during this type of work or may need to take a break before we restart the facility. This is all very dependent upon the situation. Appropriate breaks are critically important for worker safety and health but developing an overly "prescriptive" break schedule will be very difficult due to varying work conditions and temperatures.

Heat illness prevention is very important to us. While we do not have a written heat illness prevention program, the principles of heat illness prevention are core to everything we do. We provide engineering controls such as shade, fans, and a Porta-cool. During the season, the building is very well ventilated because of the large air volumes we use to move products throughout the facility. We supervise our employees and constantly monitor ambient heat conditions. We constantly provide hydration with water, and to keep our employees healthy, we encourage our workers to drink water as opposed to sugary drinks like soft drinks. We want to keep our employees safe and healthy. We want them to go home safely each day and come back to work the next. Our supervisors are very mindful of the hotter work environments and monitor employees carefully.

Having a nationwide "prescriptive" acclimatization plan does not make sense because of the high variation in normal high temperatures and humidity levels across the United States. Most of our folks think it's a cool day if temperatures drop below 80°F. Most of our seasonal employees are doing jobs with higher heat exposure prior to working for us during the operating season. The proposed heat triggers are very low, especially for southern climates. I noticed that the references to existing standards are from California, Colorado, Washington, Oregon and Minnesota. These states generally have much cooler temperatures throughout the year than Texas, where temperatures are normally above 80°F much of the year. These temperature differences could put some industries at a disadvantage during the hotter months in the South. Guidance needs to recognize the regional acclimatization that exists across the U.S. and provide the necessary flexibility.

As was expressed by several SERs during the conferences, the proposed recordkeeping requirements are a burden that gives OSHA an avenue to cite but does not, in my opinion, help protect workers. Small businesses, such as cotton gins, do not have the necessary staff and resources to devote to this requirement. Recordkeeping requirements will inherently make the standard more prescriptive. In addition, the acclimatization recordkeeping requirement for seasonal employees is overly burdensome as employees are often working for short periods of time in a given facility.

In addition to managing Meadow Farmers Co-op Gin, I am on the Board of Texas Cotton Ginners Trust which is our statewide workers compensation company for the cotton ginning industry. As a board member I get to see the claims filed with the Trust. In the past 30 years, we

have had a total of 13 total claims related to heat illness out of a little over 6500 claims paid in the history of our organization. These were mostly minor claims resulting in a doctor's visit to make sure everything was alright. I do not believe that any of these incidences would have been reportable under OSHA's rules. I have been on the claims committee of the Trust for over 20 years, and our committee carefully monitors all claims in Texas for injury or illness trends. If we had ever detected a heat illness or injury trend, we would have addressed it at that time.

It would seem that the incidence rate across the US is relatively low as well. In the materials provided by OSHA to the SER's, it was stated that over the last ten years, there were an average of 3,389 heat related injuries or illnesses per year. According to my research, there are around 2,800,000 total injuries and illnesses each year, which means that heat related illnesses and injuries account for about 0.12% of the total. While this does not make this issue any less critical to our operation, it does indicate that the current programs in place across the US are reasonably effective, and that a prescriptive program is not needed.

Prevention of heat related illnesses is very important to us because of where we live and work. However, instead of a very prescriptive nationwide standard that attempts to mandate specific break schedules, acclimatization schedules, and temperature triggers, I believe maximum flexibility on how we handle our programs will result in a much more sensible regulation that will result in greater worker safety.

Sincerely,

Dan Jackson
Manager
Meadow Farmers Cooperative

To: stone.jessica@dol.gov

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Cc: Martha.Duggan@nreca.coop

RE: Additional Information from SEMO Electric Cooperative regarding OSHA's proposed heat injury and illness standard

I appreciated the opportunity to participate in a recent SBREFA panel concerning OSHA's proposed Heat Injury and Illness standard. I wanted to reiterate some of the points I made during the panel.

SEMO Electric Cooperative serves 25,800 electric and fiber consumer members over 2500 miles of distribution lines. Of the counties SEMO serves, 60% are defined as economically challenged. Therefore, our emphasis is on providing safe, affordable, reliable electricity with an emphasis on keeping rates low.

Our workforce has 21 field workers and we have experienced no reportable heat injury or illness in the past 10 years. Our view is that the electric cooperative sector should be exempt from an OSHA rule on heat injury and illness.

My understanding of the process is that OSHA must demonstrate that any proposed standard must reduce significant risk to the extent that it is technologically and economically feasible to do so.

As I indicated on the panel, I don't believe that the proposal would significantly reduce risk as our sector has an excellent record of few to no reportable incidents related to heat. And, there are several elements of the regulatory language that would create technical and economic challenges to small entities. These include:

- A requirement to use wet bulb temperature technology would create an economic burden and would not improve worker safety.
- The temperature triggers contained in the regulatory language are not realistic for my area of the country. We average 50-60 days above 90 degrees annually and an 80-degree trigger would add administrative burden onto our workers and economic burdens onto the cooperative.
- Acclimatization would add unnecessary administrative and economic burdens onto SEMO Electric Cooperative and could lead to work force concerns over fairness.

I have the following comments on the outline provided by OSHA for the panel:

- Scope and Application – SEMO Electric Cooperative's view is that our industry should not fall within the Scope of any proposed rule. OSHA should focus its efforts on industries where there are large numbers of reportable incidents of heat related injury or illness.

- Hazard Identification and Assessment – SEMO's Heat policy lays out the process to be used in the field for heat hazard identification and assessment.

- Hazard Prevention and Control Measures – SEMO's Heat policy articulates the prevention and control measures for identified heat hazards, including breaks, hydration, spending time in air-conditioned trucks.

- Medical Treatment and Heat-Related Emergency Response – SEMO's policy contains the protocol for medical treatment and emergency response in the event of heat emergency. As noted above, in the past 10 years, this protocol has not been invoked, although we train on it and exercise it annually.

- Worker Training – As part of SEMO's training, all workers are trained on recognizing heat hazard, implementing prevention measures and how to respond in the event of a heat emergency.

- Recordkeeping – SEMO complies with OSHA Recordkeeping and Reporting requirements. As noted above, our OSHA reports show zero heat incidents in the past 10 years.

Thank you again for taking SEMO's views into account as you continue the process.

GOLF CLUB

9/14/23

Heat Injury & Illness Prevention Comments from SBAR meeting

I would like to suggest the following items to be considered in an OSHA Heat Injury program for small businesses:

1. A trigger for possible heat injury would be based on local weather forecasts in the area of work only.
2. At a minimum, an OSHA requirement for notifying existing and new employees of the dangers of working in extreme heat would be by distributing a written safety plan. An employee should be required to sign that he/she has received the standard for the protection of the employer and employee. A suggestion would be if OSHA could develop a workplace Poster that would require to be posted in a conspicuous place and would describe the standard and tips on staying cool as well as the symptoms of heat stress.
3. There should be a minimum rest break standard- 15min every 2 hours. The employer **should not** be responsible for employees who **do not follow that standard**.
4. There should be a choice of a minimum standard for providing either fluids, ice, shade, A/C building or a vehicle to cool down in or at.
5. There should be no acclimatization period. Since for example, in the golf maintenance setting, hot weather usually builds over time where the person can adjust to it accordingly. It is rare that I would hire someone in the dead summer during a heat wave.
6. The only record keeping should be for an injury as required with an OSHA 301 form.

Thank you for the opportunity to make comments.

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TO: OSHA Small Business Advocacy Review Panel Members
Bruce Lundegren, Office of Advocacy, Small Business Administration
Josh Brammer, Office of Management and Budget, Office of Information and Regulatory Affairs
FROM: Earl Miller, Accurate Castings, Inc.
SUBJECT: Written Follow-up Comments from SBREFA Panel 5 on September 18, 2023
DATE: September 29, 2023

Thank you to OSHA for the opportunity to participate on the OSHA SBREFA panel for the Potential Standard on Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings. My preparation for the heat illness panel included: listening to other panel testimony, reviewing the May 3, 2022 stakeholder public meeting, discussing the topic with my team at our foundry, with members of our trade association, the American Foundry Society, and taking over 100 + measurements within our foundry before, during, and after the two recent heat waves at the end of summer. The following are my written comments to supplement and reinforce those I made verbally on Monday September 18th during the fifth SBREFA panel.

General structure of Rule/Guidance:

- Instead of a lengthy 80-page draft rule, please write a much shorter, more flexible heat illness rulemaking. I personally believe broad-based brevity would be the only way for an OSHA plan to be "One Size Fits All".
    - I heard (probably) 95% of SBREFA panelists mention *"One size doesn't fit all".* So therefore, I challenge OSHA to write a short rule that is fair, meaningful, emphasizes understanding/awareness/education/training, and lessens heat-related risks. I believe this can be done but it will take creative thinking on OSHA's part to draft a workable rule.
- Performance-based rather than prescriptive based.
    - Guidance on heat protection is important and can be helpful to employees and employers if the guidance is well written.
- Do not refer to specific solutions or innovations in a rulemaking. Specific innovation solutions will change over time. The rule should be written with more flexibility and less specificity.
    - Our foundry's uniform (PPE) company strongly disagrees with the idea of using 'zoned design' PPE, as referenced by Dan Glucksman from the International Safety Equipment Association in the stakeholder meeting May 3, 2022. Our uniform company has told me zoned uniforms could potentially put our employees at more risk, given the circumstances in a foundry.
    - Also, our foundry has experimented with some of the referenced cooling vests, but the cooling effect on the ones we tried didn't last long enough to warrant their usage due to the vest quickly warming up from nearby radiant heat. Employees trying the vests removed them after ~20 to ~30 minutes because they became warmer than ambient air.
    - Also, IF innovative hydrophobic fiber solutions were to be specifically mentioned, that idea could potentially be at cross-purposes with EPA's upcoming rules on PFAS and PFOA.
- **There should NOT be any exceptions or exemptions to a heat illness standard.** *The general consequence of rules written with exemptions is diminished effectiveness. Risk of heat illness could happen to any employee in any size business, including those employees working from home or an employee responding to an emergency, or professional athletes, mail carriers, US military, park rangers, etc.*

- Emphasize training and the importance of understanding, awareness, education, and supervision/management. THESE are the topics that are the heart of what can make a difference to reduce heat injuries and illnesses.
- OSHA needs to find a balance between creating fair policy that can both protect workers and can help sustain businesses long term – no matter where a business is located, and no matter where the employee is located.
- If the agency is going to reference outside agency consensus standards, such as ACGIH 2023 TLVs and BEIs, that guidance should be provided and available free of charge.
- Don't copy existing state rules verbatim into a new Federal rule without careful consideration of each component. Some of the existing state rules could be contradictory, might have temperature triggers that don't work in other Regions of the country, and might not make sound engineering sense.
    - For example, temperatures triggers from one Region won't make sense for other Regions. Most of the states with rules have the majority of their population in Region 1, (the coldest of the three Regions)
    - Also, for example, Minnesota's Administrative rule 5205.0110, Subpart 1 (https://www.revisor.mn.gov/rules/5205.0110/) says: "*Air circulated in any indoor place of employment shall be supplied through air inlets arranged, located, and equipped so that the workers shall not be subjected to air velocities exceeding 200 feet per minute*…" However, there's an engineering problem with having a rule like this. Sometimes, using cooling air velocity higher than 200 fpm can be good engineering practice, depending on the situation. While, yes, there are applications where keeping velocity below 200 fpm is wise, in other applications, high velocity air is beneficial to the cooling effect in keeping an employee's core temperature low.

Employee Responsibility:

- The employee's role in reducing risk is important. In addition to listing what the employer's responsibilities are, it is important to have a section on the employee responsibilities, including the role of certain foods and caffeinated products, avoiding recreational drugs, and staying hydrated in high heat.
    - The ASTM E3279-21 Standard Guide for Managing Heat Stress and Heat Strain in Foundries provides an objective framework for recognizing heat stress and heat strain in foundries and provides for the use of best practices to manage heat exposures to minimize heat strain. The ASTM standard spells out activities and responsibilities for foundry managers, supervisors, and workers to help prevent heat related illnesses. Although ASTM E3279-21 is a foundry specific standard, we believe it could be applied to other industries as well as foundries.

Statistics and Recordkeeping:

- According to the Centers for Disease Control (CDC), 673 heat related deaths occur each year. OSHA/BLS claims 33 (5%) of those are work-related, therefore, 95% (640 annual deaths in the US) are non-work related. … What will be done to reduce the other 640 heat related fatalities each year?
- On OSHA 300 logs, I recommend replacing the column labeled 'poisoning' in recordkeeping with a 'heat related' recordkeeping column. If you make this change, publicly available OSHA 300 data will help show the accuracy of OSHA's under "estimates" of over 3,389 annual work related heat

injuries and illnesses. There appear to be far fewer 'poisonings' than 'heat related' issues. Also, by making the 'heat related' illnesses and injuries a recordkeeping column:

- The publically available 300 data will show what SIZE businesses are having most heat related reportable and recordable issues.
  - The publically available 300 data will give better visibility to which NAICS code businesses are having more issues than others. Consequentially, those specific trade associations could work on addressing additional education with their members.
- It appears, to me, as though the top two NIACS sectors with heat related fatalities are agriculture and construction. Does this trend extend to heat related injuries and illnesses in those same two NAICS sectors?
  - Might national efforts and dollars be more/most effective to be focused in, say, the agriculture and construction areas?

Temperature:

- **LOW THRESHOLDS:** The agency should re-consider the low thresholds listed in Table 1. After analyzing over a hundred points of dry bulb, wet bulb, sling psychrometer and WBGT measurements, *(taken before, during and after the two heat waves our foundries experienced August 23 & 24, 2023 and September 5 & 6, 2023),* I've concluded relative humidity, and heat index don't have a lot of correlation to the way our foundry manages heat-related risk. What seems to have more correlation is the way we modify management of and supervision of employees in higher heat. It turns out we have done this from 'the feel' of wet bulb and globe temperatures. (NOTE: We normally do not take measurements. I'm making the correlation from data I gathered in preparing for this SBREFA panel.)
  - Please include WBGT and the NIOSH calculations as an option, instead of ambient or heat index. WBGT appears to be a valid heat stress measurement tool that could be helpful in engineering reduced risk in indoor environments with heated processes. Though most of the foundry work is done indoors, the heat generating process equipment creates a hybrid situation with both wet bulb and radiant heat detected by WBGT.
    - The response we have taken to increased heat risks seems to correlate fairly well to WBGT charts available at www.weather.gov (University of Georgia, US Military, etc), and NIOSH Figure 8.2 (page 95) in their Occupational Exposure to Heat and Hot Environments.
    - WBGT measurements aren't easy to take because:
      - Employees move and change positions all the time.
      - Heat generating processes are not constant. Sometimes the heat sources is covered, sometimes uncovered.
      - WBGT measuring devices seem to be slow to react, much slower than a sling psychrometer.
      - Locating the WBGT device on the employee is challenging.
        - For example, with a source of radiant heat in front of an employee's right arm, that's where the highest reading occur, even though the employee has PPE protecting that right front quadrant. And the employee's left front quadrant is somewhat shielded from direct radiant exposure. Additionally, high velocity cooler air could

be blown on the back half of the employee……. **How would one measure this employee's heat exposure to compare to any prescriptive rule?** I'm not sure it's possible.

- According to ASTM E3279-21 Standard Guide for Managing Heat Stress and Heat Strain in Foundries, the most important temperatures are:
  - Proper body function core temperature at 98.6 F
  - Heat Exhaustion / illness at core temperature above 100.4 F, and abnormal performance of one or more organ systems without injury to the central nervous system.
  - Heat Stroke at core temperature of 106 F

- **HEAT INDEX**:
  - Please understand, in my opinion, Heat Index is misleading. It isn't recommended for sunny locations. And after all the research for this SBREFA panel, I do not believe it gives an intuitive reading. I have trouble relating to the 'sultriness' of what Heat Index is intended to mean. And, the more I look at how it's calculated, the less it makes sense to me.
  - The Heat Index calculation is empirical based on an old definition of 'sultriness'. No one could likely recite the formula. $E=MC^2$ seems easier to understand:
    - Heat Index = $-42.379 + 2.04901523T + 10.14333127R - 0.22475541TR - 6.83783 \times 10^{-3}T^2 - 5.481717 \times 10^{-2}R^2 + 1.22874 \times 10^{-3}T^2R + 8.5282 \times 10^{-4}TR^2 - 1.99 \times 10^{-6}T^2R^2$
  - Canada uses a different 'feels like' empirical calculator, called Humidex that gives even higher numbers that 'Heat Index', even with the same input data. This is further proof that 'feels-like' calculations like these are misleading to the public. It's possible the Canadian Humidex has to do with a more northern climate not having acclimatization to temperatures. But who really knows?
  - Maybe the prototype/future NWS HeatRisk will be an improvement?

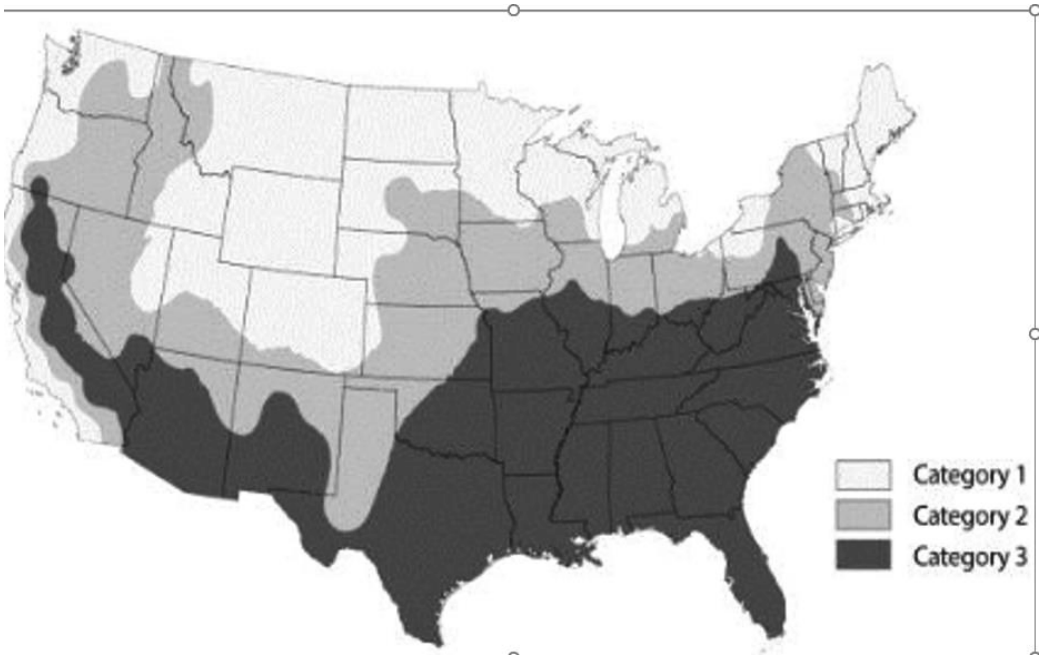
- **HEAT INDEX VS AMBIENT VS WBGT VS HUMIDEX** … A complex topic is challenging to make simple.
  - **HIGH HEAT TRIGGER FALSE ALARM:** After the September 6th heat wave subsided, I took measurements September 7th at a heated process in the foundry. All employees operating this equipment said the environment "***felt normal***", "***There are no issues with the temperature today. It feels comfortable***." Yet here are the wide variety of temperature readings:
    - NIOSH app ambient temp: 66 F
    - NIOSH app Heat Index: 66 F
    - NIOSH app Relative Humidity: 93 %
    - At machine: **Sling psychrometer dry bulb: 95 F**
    - At machine: Sling psychrometer wet bulb: 76 F
    - At machine: Sling psychrometer Relative Humidity: 40%
    - At machine: Sling psychrometer **Heat Index: 99 F**
    - At machine: **WBGT dry ambient: 90.3 F**
    - At machine: WBGT Relative Humidity: 47.2%
    - At machine: WBGT Globe: 89.9 F
    - At machine: WBGT wet bulb: 73 F
    - At machine: WBGT Dew Point: 66.5 F
    - At machine: **WBGT calculated: 78.2 F**

        - At machine: **WBGT Heat Index calculated: 94 F**
        - At machine: Canadian Humidex: 102 F
    - Note: **OSHA's rule would have had these employees in high heat trigger, even though the NIOSH app read 66 degrees and employees felt comfortable with a WBGT of 78.2.** The most important number here is the employee's core temperature. That wasn't measured, but I believe the 78.2 WBGT is the best reflection of the perception of heat at the time, not the ambient temperature or the Heat Index. What our employees say they were feeling matches the perceptions of the **NIOSH chart Figure 8.2**, (even at the most strenuous metabolic heat rate – which was NOT the case at this machine). But with OSHA's proposed rule, these employees would have been in a high heat trigger, though it would have been a false alarm.
- **NIOSH APP:** Make the NIOSH app more useful with wet bulb and wbgt components.
    - Wet bulb can be back calculated from RH.
    - Can a WBGT number be added based on forecasted sun/cloud cover?
    - When I first viewed the app, it seemed useful. It's a shame if it couldn't be improved.
- **AIR CONDITIONING:** Do not mandate air conditioning. 78 degrees ambient is what Dept. of Energy recommends setting air conditioning for occupied spaces. This is not feasible for foundries not only from a cost standpoint, but from an energy grid standpoint as well.
    - IF WE WERE TO AIR CONDITION OUR TWO FOUNDRIES, my rough calculations are: we would more than double our electric demand - from a combined 4,750 kW demand currently to 10,050 kW demand.
        - The electric grid is not set up for this kind of extra load.
        - We couldn't afford to air condition our foundry. Our foundry's utility electric rate structure is on/off peak, but air conditioning would run into on-peak. Our utility company charges an on-peak 75% ratchet for 11 months, so even during colder months, we would end up paying for over 150% our baseline demand charge. I estimate our combined demand and energy costs would be an additional 2.4 million dollars annually. Initial cost of equipment would be over 10 million, not including high annual maintenance costs, nor replacement costs 7 to 10 years down the line. Air conditioning equipment operating in colder climates must have more costly cold starter kits with heaters. More environmentally friendly Freon runs at higher line pressures. My experience has been equipment running the more environmentally friendly Freon fail sooner than older Freon systems. More frequent failures inadvertently lead to more Freon leaking. More Freon leaking leads to more Global Warming.
- **POTENTIAL ELEMENTS AND WHEN THEY MIGHT BE REQUIRED: Figure 1**
    - Most of what is listed in Figure 1 seems reasonable to us. We already do much of this, with one notable exception: "Humidity Control". Please remove "humidity control" for three reasons:
        - 1. Does "humidity control" mean OSHA requires air conditioning? What is the intention?
        - 2. "Humidity control" could mean control of steam venting, or cleaning water off floors, etc. What is the intention?
        - 3. Relativity humidity can be decreased by increasing the temperature. This conflicts with trying to keep temperatures low.

- Page 18 of the SER Background Document, OSHA notes "*The standard could require that employers provide drinking water located as close as practical to the work area, with each employee having access to at least one quart (32 fluid ounces) of suitably cool drinking water per hour and having ample opportunity and encouragement to drink small amounts of water or other acceptable beverages*."
    - OSHA needs to clarify what is the definition of cool water, if it's referenced. BUT, companies will not have time to take temperatures of the drinking water they are providing to their employees. Colorado calls for water temperature be kept at 60 degrees or cooler.
    - Furthermore, for foundries producing castings with certain alloys – for example leaded alloys, - water needs to be placed away in a separate, covered area so not to conflict with the agency's Lead standard.
    - In all foundries, proximity of having water near the molten metal needs to be carefully considered, therefore foundries must have flexibility regarding the proximity of water requirements.

ACCLIMITIZATION:

- Please create a rule that takes Regional differences and acclimatization differences into consideration.
- Please consider the five states with existing heat rules (California (outdoor only), Colorado, Minnesota, Oregon and Washington), have most of their most highly populated areas located in what is geographically Region 1 of the 3 Region system, according to www.weather.gov



- It is critical to retain acclimatization flexibility. We don't follow 20/40/60/80/100. I'm not sure many small foundries do. …. New employees at our small business spend many hours of their first day in training. Then, the remainder of Week 1 and into Week 2 new employees work with mentors in the environmental temperature but with less work load. The new employees are slowly

acclimatized to work load and temperature. For us, we adjust that schedule based on employee feedback; it's not prescriptive.

- Re-acclimatization: 7 days is too short of a time. We agree with others in the foundry industry in recommending 30 days as a reasonable re-acclimatization trigger point for experienced employees.

Thank you for the opportunity to participate. If you have any questions or need additional, feel free to reach out to Earl Miller - emiller@hilerindustries.com

Heat Injury & Illness Prevention in Outdoor and Indoor Work Settings

Small Business Advocacy Review (SBAR) Questions

Answers to Questions For Holley-Navarre Water Systems, Inc. (HNWS) and Subsidiaries The Club at Hidden Creek (TCHC) and Municipal Engineering Services, Inc. (MESI)

This standard is a good idea.

General Topics

1. What types of occupations at your workplace do you consider outdoor occupations, and what percentage of your workforce falls into that category? Holley-Navarre Water System, Inc.(HNWS): Well Operator, Field Techs, Valve Maintenance Techs, Meter Service Techs, Line Spotters, Back-flow Techs, Project Inspector, Sewer Collections Techs, Wastewater Treatment Plant Operator, Electrical/Instrumentation Tech, Utility Mechanic, and SCADA Tech. 60% of work outside.
   The Club at Hidden Creek (TCHC): Golf Course Superintendent, Assistant Superintendent, Greens keeper, Mechanic, Cart Barn Attendant, Beverage Cart Attendant, Starter/Marshall. 75% work outside.
   What types of occupations at your workplace do you consider indoor occupations and what percentage of your workforce falls into that category? HNWS: CEO, General Manager, Administration Director, Finance Director, Organizational Resources Director, SCADA/Electrical & Wastewater Collections Director, Water Ops Manager, Wastewater Treatment Manager, Regulatory Compliance Manager, Service Tech Manager, Member Services Manager, IT Manager, HR Manager, Maintenance Manager, Safety Manager, Admin. Assistant, Member Services Clerk, IT Tech, Finance Administrator, AP & Finance Specialist, and Finance Assistant. 40% work indoors with 10% of those working a 50/50 split.
   TCHC: Director of Golf Business, Bar Manager, Building Maintenance, Pro Shop Attendant, Bartender, and Snack Bar Attendant. 25% work inside with 5% working 50/50 split.

2. Consider employees at your workplace who work both indoors and outdoors; on average, how much time do they spend outdoors? There is an average of a 50%.
   How much time indoors? There is an average of a 50%.
   How much time indoors is next to process heat or heat-generating equipment? 1%

3. Are there certain work settings in which you are unsure if they would be considered outdoor work settings or indoor work settings? No If so, what are they? What characteristics of that work setting make it hard to classify as solely indoor or outdoor? Buildings that have open bay doors or that are not protected from outside weather conditions are considered outside. We have two such buildings.

4. What geographic regional differences should be considered or accounted for when determining the appropriate interventions and practices to prevent heat-related injuries and illnesses among workers? The heat index should be the main determining factor. This may offset the high humidity vs. low humidity debate. As an example, the humidity in NW Florida is higher in the morning and decreases throughout the day then increases in the evening but the heat index is higher during our "lower" humidity time frames. Additionally, if the heat index is 110° in the north or south it still feels like 110°. While southern states may be used to the heat it does not mean the danger doesn't exist it simply means they have learned how to cope with the danger.

5. Does your workplace currently implement any of the measures considered in the regulatory framework to prevent or mitigate heat-related injuries and illnesses among workers? Yes. If so, which measures have been the most effective? Training is a key element. Heat Training begins in the spring and is discussed frequently in toolbox talks throughout the summer. All company phones have the OSHA-NIOSH Heat App. and employees are trained in how to use it effectively. Hydration and rest (15 min. for every hour in 95° or higher temps). Water and electrolytes, including popsicles, are readily available.

6. If you have mobile work sites, what difficulties do you encounter when trying to protect workers from hazardous heat? Shade other than vehicles is sometimes difficult to achieve. We can use umbrellas for stationary work but job sites that use equipment (excavator, pump truck, etc.) are more challenging. The access to bathrooms in close proximity we have to rely on public restrooms. We are not on the sites long enough to use porta-potties How do you deal with these challenges? We are currently trying to find better solutions for shade. We utilize public restrooms and encourage employees to return to the office. OSHA is particularly interested in challenges that may be different than those faced in fixed work sites. Our fixed worksites can have HVAC, shade (umbrellas, or inside building), and restrooms.

7. In Section III of the SER Background Document, OSHA has provided time and equipment estimates for different options that OSHA is considering for a potential heat standard. Are these estimates consistent with your experience? Overall, the estimates are close. The exceptions would be the artificial shade, one tent would not be enough because we have multiple two- man and a few solo workers. Most of our vehicles are trucks and you can't fit four people in one vehicle (table 5). We use bottled water with electrolyte packets as the coolers with spigots and reusable water bottles may pose a sanitary issue. We do not have a set monitoring protocol it happens more organically as employees transition from site to site. We allot more time for breaks (15 min./hr. @ 95° or higher heat index and as needed).

8. If you were structuring a Heat Injury and Illness Prevention standard, what provisions do you believe are necessary? Written program that is followed. (Not just putting something together that checks all the boxes.) Training (Initial and refresher as needed i.e., injury/illness, change in work conditions, someone observed not following procedures.), add monitoring worksite conditions (we have lift station doors that are exposed to direct sunlight and can become very hot), acclimatization protocols, rest, shade, and hydration protocols.
   What provisions, if any, do you believe could be relaxed for certain groups, types, or sizes of entities? For rest breaks consider adding "or equivalent measures" for entities such as workers at heights where climbing down for a break could pose a hazard. Written programs and record keeping for 10 employees or fewer that are NOT part of any other entity. (As an example, our company has two subsidiary companies and having a written program would not be as burdensome for us). At the end of the day all workers should be protected (including public sector workers) so any provision that is directly related to that end should be kept in place regardless of size or sector. The administrative side should not be the focus for relief.

Scope:

9. Do you have any concerns about the feasibility of complying with any elements of the regulatory framework? Only regarding acclimatization of returning workers where a limited number with that skillset are available i.e., water operators. The safety of employees is of the utmost importance to us so we will comply with the HIIPP standard if put into effect.

10. OSHA recognizes that there may be some language in the regulatory framework that may not be directly applicable to the operations of some industries within the contemplated scope. OSHA seeks input from SERs in helping identify such language. The language appears to be applicable to our industry.

11. How, and to what extent, would small entities in your industry be affected by a potential OSHA standard to protect workers from hazardous heat? I think it would be greatly beneficial because I believe that heat injury and illness is underreported. By having this standard in place companies will begin to follow it and then realize decreased absenteeism and increased productivity.
    Do special circumstances exist that make preventing heat-related injuries and illnesses in outdoor and indoor work settings more difficult or more costly for small entities than for large entities? Not necessarily.
    Please describe these circumstances. A small company does not necessarily mean an income deficient company. If the standard has provisions for “equally effective” methods, there should not be too much burden on smaller companies. If I can cool down my workshop to acceptable levels using fans instead of HVAC that should be ok. The result is more important than the method.
12. OSHA has identified core industries as those that are likely to have an elevated risk of exposure to heat stress. Has OSHA overlooked any industries that should be included in the list of core industries? It looks complete.

Are there industries that should be excluded from the list of core industries because they do not have an elevated risk? I think all the industries listed should be included. If so, please identify them and provide an explanation for inclusion/exclusion.

13. Should any types of employers or work settings or activities that are currently included in the contemplated scope of a heat standard be excluded? Maybe.
    If so, please identify them and provide an explanation for why they should be excluded. If any activity would potentially be more hazardous by complying with the standard, then they should be able to utilize alternate methods. Ther employer should have to prove this point and not merely make the claim.
14. OSHA is considering the following exemptions to the scope of a heat standard:
    - Short duration exposures (e.g., 15 minutes of work in hazardous heat conditions every 60 minutes)
    - Emergency operations, such as those already covered under 29 CFR 1910.156 or 29 CFR 1910.120
    - Work in spaces where mechanical ventilation keeps work areas below certain conditions (e.g., the ambient temperature of 80°F)
    - Work done from home (e.g., telework, remote, and hybrid employees)
    - Sedentary or light activities performed indoors, if these are the only activities performed during the work shift.

    OSHA is interested in receiving feedback from SERs on whether these settings should be in the scope of a potential standard.
    These exemptions seem fair.

Heat Injury and Illness Prevention Program:

15. If your workplace does not have an existing Heat Injury and Illness Prevention Program (HIIPP), how would you develop a HIIPP at your workplace? Preferably there would be a template. Review the standard and compare it with our current policies and procedures.
    What steps would you take to develop the HIIPP? Add a written element of what we currently do into our current Safety Program. (I will be doing this anyway). Add or modify our current procedures as needed to be compliant with the standard. (WHICH WE NEED THIS STANDARD) How long do you estimate that it would take to develop the HIIPP? Minimum 40 hours (without a template), this would include meetings with Safety Coaches, Managers, and employees. Then train everyone on the standard and then implement the standard.

16. If your workplace has an existing HIIPP, what steps did you take to develop the HIIPP? We do not have a written HIIPP.
    Does your HIIPP include any of the elements discussed in Section II of the SER Background Document (page 10)? We currently monitor the heat index utilizing the OSHA heat tool and Weather Underground and the OSHA/NIOSH Heat APP is on all company phones so that employees can monitor the conditions at their specific job site at the time. We encourage employees to use their work trucks as cool down zones as needed. (There are no more than two employees in a work truck at a time). When the heat index is 95°, we encourage 15-minute break for every hour worked. Employees are also allowed to take breaks as needed. We provide bottled water, and each truck has an ice chest (we have ice machines at all our locations). Electrolyte powder and popsicles are also available. (Employees are instructed to drink a bottle of water and then a bottle of water with electrolytes and alternate throughout the day.) We also educate on the signs/symptoms and first aid measures (these are also on the OSHA/NIOSH APP). We discuss the current day's heat index and provide guidance accordingly. We provide cooling towels and are currently looking into options for our hi-vis vest as the current ones compound the heat. Hi-vis T-shirts and cooling hard hats are among the options.
    What steps would you have to take to update the HIIPP if OSHA adopted a heat standard? Communicate the need for change and begin the steps listed above.
    How long do you estimate that it would take to update the HIIPP? Minimum 40 hours (without a template)

17. The standard could require that employers involve employees in the development of the HIIPP. Have you ever involved employees in the development of any injury and illness programs/plans? Yes
    If so, please describe the level of employee involvement and how it may have impacted the resulting program or plan. The Safety Coaches are involved in meetings regarding changes and affected employees are interviewed for their feedback and suggestions. It is easier to have buy-in if the employees are involved in the process.
18. If you have implemented a HIIPP, in your experience, what elements of your company's HIIPP have been most effective in reducing heat-related injuries and illnesses at your workplace? No formal HIIPP has been implemented.
19. What metrics do you utilize to determine effectiveness of the HIIPP? No formal metrics are used currently. All success/failures are determined by observation and employee feedback.
    Have you seen a reduction in the number or severity of heat-related injuries and illnesses? Unfortunately, this is something that goes under reported as most employees chalk it up to part of working in the heat, so they don't think about saying anything. (This is likely the case for a lot of companies, especially those is historically hotter climates.) Which elements did not seem effective?

20. Has your HIIPP reduced direct costs for your worksite (e.g., workers' compensation costs, fewer lost workdays) and indirect costs for your worksite (e.g., reductions in absenteeism and worker turnover; increases in reported productivity, satisfaction, and level of safety in the workplace)? Yes.
    Please quantify these reductions, if applicable. Employees have expressed great satisfaction with the availability of electrolyte powder and popsicles, being able to use work trucks as cooling stations, and the high heat index break schedule. (15 minutes for every hour worked outside). This naturally keeps the EE safer, and their satisfaction directly correlates to increased productivity.

Hazard Identification and Assessment:

21. If you conduct heat hazard identification and assessment at your workplace, how often is this conducted and how long does it take? 40 hours (evaluate, interview, and report findings)
    What factors do you evaluate during the heat hazard identification and assessment? The task, PPE required, worksite conditions i.e., confined spaces, equipment that is exposed to direct sunlight (metal doors of lift stations or valve boxes, and padlocks). Current procedures and improvement options.

22. If you are currently monitoring heat conditions at your worksite(s), what kind of monitoring equipment do you use? OSHA Heat tool, Weather Underground, and the OSHA/NIOSH Heat APP.
    How many units of equipment are used? All company phones have the APP, and all outdoor workers have a company phone or are working directly with an EE that has a company phone.
    How much does it cost to purchase the equipment? The phones are part of operational cost and are not considered.
    How much time does it take for each measurement? Two minutes to calculate manually (GPS coordinates are also part of the equation) and 45 seconds to look at the APP (includes opening phone, looking at conditions, and closing the phone.)
    How often are heat conditions monitored at your worksite(s)? No less than three times a day. (Morning, lunch, and afternoon). EEs also check it periodically throughout the day.

23. Are there other factors that you consider for hazard identification and assessment, either for fixed or mobile work sites, that are not included in the regulatory framework? Yes
    If so, what are they and why do you think they are important? Surface temperatures of equipment, materials, etc. that are exposed to the heat. This is critically import because there is the potential for an employee to be burnt by these surfaces.

24. OSHA is considering permitting an employer to forgo tracking forecasts or taking measurements if the employer assumes that a work area meets or exceeds both heat triggers. Employers that elect to do this would not incur monitoring costs. These employers would still be required to comply with relevant control measures as though they took a measurement that meets or exceeds the heat triggers. Do you think you would be likely to elect this exception? Yes, for the summer months.
    Why or why not? In the summer we are always at the proposed heat triggers. We would monitor it in the other months because there is the potential to reach the heat trigger even in the winter.

Engineering Controls:

25. What engineering controls are in place at your workplace to mitigate the impact of process heat or heat generated by equipment on worker exposure to heat? Exhaust fans/vents

26. If your company provides company-provided vehicles to any workers, what types of controls to mitigate heat exposure are available to workers while using the vehicles? They are allowed to use the A/C to cool down. The addition of sunshades for longer jobs would also be a great idea.

27. OSHA discusses potential options for engineering controls in Section II of the SER Background Document (pages 16-17). Do you currently utilize any of these controls at your workplace? Yes.
    Which of these controls do you find to be the most effective? Vehicles for A/c and shade. Umbrellas for artificial shade. Air-conditioned breakrooms.
    How does the type of work site (indoor, outdoor, vehicles) impact the effectiveness of these controls? Some terrain makes using umbrellas difficult. As does the use of certain heavy equipment. (Excavators and pump truck)

Water:

28. If you provide water coolers (with spigots) at outdoor worksites, how many coolers do you currently have and in what size? N/A due to hygiene concerns. How many employees do these coolers accommodate?

29. In your workplace, how are you currently providing water to employees? Water bottles
    What factors do you consider when determining the best method to provide suitably cool water that is easily accessible to employees? Each work truck has an ice chest, and all our locations have ice machines. Employees can get ice from the nearest location and not just their home location.
    Does this differ for outdoor and indoor work settings? The administration build has filtered water from the refrigerator

Protections for Unacclimatized Workers:

30. Are there different challenges and best practices for acclimatization in indoor work settings versus outdoor work settings? Our indoor areas are air-conditioned. Employees in the maintenance buildings are treated the same as an outdoor worker for acclimatization purposes. (Current employees in these areas have been here a long time)
    Are there unique concerns or approaches for implementing acclimatization for a small versus large business? For us in particular no. If a small business had a union workforce, they may not have the capital to pay an employee a full day's wage for a partial day of work. Some unions only allow work to be performed for your specific task.

31. What are the benefits and costs associated with acclimatization? Employee safety and retention. The cost for us is offset because we already start the employee off with a half day of training on day one and they are not

allowed to perform any manual labor other than low exertion tasks, such as, retrieving tools and materials.
Are there any challenges or barriers to providing workers with acclimatization? Not for us.

32. OSHA estimates that employers would assign workers to alternative tasks during some or all the acclimatization process, which would temper the amount of lost work time. Would this be possible at your company? Yes.
    Why or why not? We start the employee off with a half day of training on day one and they are not allowed to perform any manual labor other than low exertion tasks, such as, retrieving tools and materials.

33. If you implement acclimatization at your workplace, what process do you currently utilize? Onboarding, they meet with HR and IT to get documentation ID etc., then New Hire Safety Training (not less than four hours). Employees then go to their assigned work location and are teamed up with a team leader/supervisor where they will undergo OJT for the remainder of the week. They are not allowed to perform any manual labor other than low exertion tasks, such as retrieving tools and materials. The exception is if they are already acclimatized to the heat from previous employment. (This is often the case in our industry)
    Do you provide heat acclimatization for new and returning workers? (Returning workers may be those returning from leave, an extended vacation, or a position where they were not exposed to heat.) No, with the exception if someone transferred from an indoor/office job to an outdoor job then we would follow normal procedures.
    How often and for how long are acclimatization protections implemented? For new hires and for a minimum of one week.
    What factors do you consider when determining the best method to provide acclimatization for your employees? The level of exertion of the task. Some jobs are more physically demanding. (Using shovels and other hand tools). What level of PPE do they need to wear? (Hi-vis vest, hard hats, etc.)

Rest/Work-Rest:

34. Do you provide "meal breaks" to all employees? Yes.
    If so, how long are these breaks typically and are these "meal breaks" paid? One hour unpaid. (Typical schedule is 7am-4pm).

35. Do you allow employees to take breaks other than a "meal break"? Yes.
    If so, how often and how long do employees take these breaks? As needed. Usually lasts 15 minutes but can be longer if needed. (Rarely over 15 minutes)
    Are these breaks (that are not a "meal break") considered paid or unpaid time? Paid.
    Do you (the employer) decide how long/often the breaks can be, or can employees take breaks when they need to? Employee decides.
    Is there a total cap (or maximum) on the amount of time for these breaks (e.g., total amount of break time allowed per day)? No. However, if it is suspected that an employee was taking excessive breaks for no reason then they would be coached on the matter. (How unnecessary breaks add to the workload of their co-workers).
36. Do you modify your policy on breaks when it is a particularly hot day? Yes.
    If so, how do you define a "hot day"? Heat index of 95° or higher.
    When an employee takes a break, what strategies can/do they use to cool down on hot days? Use of A/C in vehicles, drink water/electrolytes, and get in the shade.

37. Would it be feasible for you to allow employees to take breaks when they need to on hot days above a certain temperature? Absolutely.
    Why or why not? Because if they overheat then they aren't as productive, they may call in the next day, or they may quit altogether.
    How about allowing employees to take 10- minute or 15-minute breaks at regular intervals, such as after every

2 hours of work, on hot days above a certain temperature? Yes.
Why or why not? We currently allow 15 minutes every hour. This also helps with morale because they know you care about them.

Supervision/Observation:

38. How are employees supervised/observed when they are exposed to heat? Buddy system, supervisors and safety manager visit outdoor worksites throughout the day. This also happens organically through phone conversations when employees finish one job and head to the next.
    Is there a specific trigger that is used to determine when supervision/observation is necessary? High heat index days the frequency of contact is increased.

39. What are the best practices for supervising/observing employees for signs of heat-related injury and illness at your worksite(s)? Training on the signs and symptoms. (You must know what you are looking for and the employee needs to know how to self-monitor).
    How effective are the supervision/observation activities in preventing heat-related injury and illness in employees? We can be proactive and make someone take a break if they are showing early stages of heat related issues. This has happened a few times over this past summer.
    Does this vary if employees are field- based and/or working at a decentralized location? Yes.
    How do employers deal with those challenges? We travel from job site to job site.

40. Employers may be required to maintain effective communication with employees whenever the initial heat trigger is met or exceeded. What methods of communication do you use? Cell phones and face to face visits.

41. An option that OSHA is considering when temperatures exceed the high-heat trigger is to require a supervisor or designee to observe employees for signs and symptoms of heat-related injury and illness. What is the maximum number of workers that you think a supervisor or designee should be responsible for supervising/observing? Ten
    Is your answer dependent on work setting? No. There would normally be no more than that on a particular job site at one time.

Other Administrative Controls:

42. In indoor environments, do you designate excessively high heat areas (e.g., those with ambient temperatures at or above 120°F)? No.
    If so, do you restrict access to those areas? How do you inform employees that an area is restricted due to increased risk of heat-related injury and illness? How do you monitor heat in these areas? Does this vary based on humidity levels?
43. During high heat, do you adjust work requirements or procedures (e.g., work schedule, workload, work pace)? Our greenskeepers start an hour early (6am.-2pm. or earlier if they finish sooner. Paid for full day) What methods do you find to be most effective? The early start for our greenskeepers works great. We also make sure our outdoor workers rotate tasks so one person isn't doing all the demanding work.

Personal Protective Equipment:

44. Under what conditions do you provide cooling personal protective equipment (PPE) to mitigate heat stress to your employees? Employees can get them whenever they want.
    What kind of cooling PPE (e.g., cooling vests, wetted garments) do you provide? Cooling towels.

45. If you have employees that utilize PPE or clothing that contributes to heat stress (e.g., protective suits or coveralls), what procedures, if any, do you have in place to mitigate the employee's heat exposure? We use face shields and n-95 mask in lieu of particulate respirators in hot weather and EE's rotate this task. Extra time is also allotted to complete this task.

High-Heat Procedures:

46. When temperatures meet or exceed the high-heat trigger, OSHA is considering requiring employers to hold pre-shift meetings to address heat hazards. Do you currently hold pre-shift meetings? Yes.
    What types of information do you share during these meetings? What the heat index will be, hydration information, signs and symptoms of heat related issues, reminders about frequent breaks, schedule more arduous task for earlier in the day.
    Do they include topics specific to heat safety? That is the primary focus.

47. When temperatures meet or exceed the high-heat trigger, OSHA is considering requiring employers to notify employees of heat hazards and protective measures to be used. What do you find is the most effective way to notify employees of increased risks at the work site? Face to face communication. This allows for instantaneous feedback and to clarify any of the requirements.

Medical Treatment and Heat-Related Emergency Response:

48. Do any of your injury and illness prevention programs/plans (not just heat-related) include emergency response procedures? Yes.
    If so, what type of emergency response procedures do you have in place? First aid and CPR and to only follow training. When to and not to move an injured person. Care for unconscious person. How to avoid heat illnesses.
    Would these procedures need to be modified to address heat injuries and illnesses? Yes, there needs to be more detail. (This is going to be updated regardless of if the standard is implemented or not).

49. What type of emergency response procedures do you have in place to respond to an employee beginning to show signs and symptoms of heat-related injury or illness? Heat stroke call 911. Heat exhaustion notify supervisor, remove unnecessary clothing, cool the worker by having them wash face and neck with cold water, encourage frequent sips of water, and if symptoms do not improve take worker to clinic for evaluation. Heat cramps notify supervisor, have worker rest in shady and cool area., give them water and electrolytes, seek medical attention if symptoms worsen. Refer to the OSHA/NIOSH APP if you can't remember what to do and notify supervisor.
    Do you have any protocols in place to determine whether and when they could resume work after cooling down? No

50. Do you have a designated person or persons who are charged with responding to emergency medical events at your worksite? Employees at all levels are given first aid/CPR training. What job title do they hold? Technicians to managers.

51. Has your workplace ever had an incident of serious heat-related illness that required efforts to reduce an employee's body temperature, such as pouring water and ice directly onto the employee or placing the injured employee into an ice bath? No. If so, was this method effective?

Worker Training:

52. If you have an existing heat safety training program, what is the scope and format of your training program? Signs and symptoms conducted in Informal toolbox meeting. Also, American Redcross. Does your training program cover any of the topics listed in Section II of the SER Background document (pages 23-24)? Yes.
    If so, which of those topics have been most effective in reducing heat injuries and illnesses? Proper precautions for work in hot areas.

53. Do all employees receive heat safety training? No
    If not, how do you determine which employees receive training? Outdoor workers receive training. But a best practice would be to include everyone.
    Do all employees receive the same training? No, additional information is added as the task requires.
    Do you provide additional heat safety training for supervisors? No.

54. Are workers in multi-employer work arrangements included in your heat safety training programs? No.
    How is training handled at multi-employer worksites? Each employer trains their respective employees.

55. Do you provide heat safety training to employees in languages other than English? No. If so, how many languages do you currently provide training in and how do you determine which languages to provide?

56. How do you determine the duration and frequency of heat safety training? Thirty minutes, when summer approaches, is when we begin focusing on training.
    Does the duration and frequency of heat safety training depend on certain conditions (e.g., increased temperatures)? Yes.
    How many hours annually do employees spend participating in heat safety training? The totals hours are not Quantified.

Recordkeeping:

57. Do you maintain records on the heat conditions at your workplace? No. How often do you record heat conditions at your workplace?

58. OSHA is considering requiring employees to maintain additional records related to heat beyond what is already captured under the existing recordkeeping requirements, as discussed in Section II of the SER Background Document (page 25). Do you currently maintain any of these records (environmental monitoring data, heat-related illnesses and injuries including those that only require first aid, environmental and work conditions at the time of heat-related injuries or illnesses, and heat acclimatization for new and returning employees)? No. If so, please describe the process of collecting and recording this information.
    If you are not currently maintaining all record types, what steps would you need to take to prepare and maintain these additional records? Set up an excel spreadsheet and begin recording. Communicate and train all employees to report anytime they have a heat related issue that requires any level of care.

Communication on Multi-Employer Work Sites:

59. If any of your worksites have multiple employers, how do you currently communicate and coordinate with other employers at your establishment? No. Does this communication and coordination include information about heat-related hazards? If so, how frequent, and how long are these conversations?

60. What are the current challenges in protecting workers in various types of work arrangements, including

multi-employer work arrangements, from heat exposure? We do not have a policy of communicating safety with other employers.

Employers in States with Existing Heat Standards:

61. If your business is in a state with an existing state heat standard, which elements of your state's heat standard do you believe have been effective in reducing workers exposure to heat? Which elements have not been effective? How has compliance with your state's heat standard affected your business's operations and finances?

This standard would be beneficial to workers in all the targeted industries. While a vast majority of the Small Entity Representatives (SERs) stated that they had not had any heat related illnesses or injuries it is probable that is due to the vast underreporting of heat related issues. That being said it needs to be simple and easily understood. A template would be of great value. The provision for “equally effective” measures should be an option when it comes to how to best care for a company’s employees. While the proposed heat triggers are low for the southeastern part, for sure, it is good to have the conversation. It is a given that this region especially would benefit from the HIIPP in some capacity. If for some reason this standard does not make it to implementation, we will do a better job in this area. Thank you again for the opportunity to participate in such an important and possibly misunderstood topic. I look forward to watching this continue through the process.

1. What I consider outside work would be any work that is done outside for more than 1 hour. About 20% of the employees are outside employees or inside employees that work outside when needed.
2. Employees that are indoor workers may have to spend a day outside to help catch the outside crew up so that we can get the line moving forward. So on average they would spend on a weekly basis some indoor workers may spend 25% of their time outside, and 75% inside. We really do not have any heat generating equipment that runs constantly.
3. The jobs are pretty straight forward outside is outside inside is inside. No guess work.
4. I think when setting the geographics of the rule we should consider the south is acclimated to a higher temp than most of the country. I still think the employers should be held to the same standards, just at different temperatures.
5. Yes, I have created a heat illness program at my place of employment we start at 7 am first break is at 9:45, lunch is at 12:45pm and then we clock out at 3:45 pm, plus we supply gator aid for all the departments, I have campaigned for a water fountain that has a bottle filler on it and have had it installed the temp is down to 45*. The plant managers and supervisor have been told they need to keep an eye on the employees look for those who look like they might be getting too hot, give them a break in the front office with water or gator aide for no less than 15 minutes or until they feel better. I have a chart that I created to track the heat and the feels like temp, to know when and if they need to be giving more breaks.
6. We do not have any mobile sites.
7. I think the timetable is a good estimate respectively. It took me around a week and a half to create a heat stress illness program. I am continuously checking and making sure it is working, by walking the plant and asking the employees if they are ok, not too hot, have they gotten a drink in the last 15 minutes? As I said previously, they break every 3 hours and can take a rest break anytime they need to, if they get overheated. I offer gator aid and we have multiple water fountains including one with a bottle filler in it.
8. I think the wording is very important when structuring any program so that there is no room for misinterpretation, some employers find loopholes that help them, I do not think this rule should be one of them. Carefully word every sentence. When it comes to relaxed areas, I live in the south and it gets

extremely hot down here, I do not think any rules should be relaxed or made so they can be misinterpreted.

9. I do not have any concerns about the program being put in place I have it working at my facility it seems to be working so far. I think there should be a week like safety awareness week where there are no taxes on safety gear, kind of like they do for school and hurricanes.
10. Not sure what languages are not applicable, but English and Spanish are the main languages for my place.
11. I really do not think that any business would be affected to a point where they wouldn't be able to adhere to the laws. 90% of the businesses in my area are fast food restaurants, discount stores and grocery stores. Most of these are indoor workers and are air conditioned. The only people I would be worried about are the construction industry because they steer outside the law, even after they get caught, they still work outside the law. People are getting hurt everyday by construction employers who think the law doesn't apply to them. In 2021 construction had the highest death rate than any other industry 946 deaths. According to the US Bureau of Labor Statistics, there were 36 work-related deaths due to environmental heat exposure in 2021. Heat exposure is avoidable if they are properly trained, and the employer follows the law. We need to figure out how we can reduce this number and make the construction industry a safer place to work.

    If it is indoors, they will have air conditioning (this is the south we have a/c in every building.) so heat stress is not an issue there. If it is outdoors, they will need to offer fans, water fountains, or water coolers, gator aid or sports drink so the employees stay hydrated, offer them a cool vest or a cool neck wrap. Depending on the cost to run the A/C, I still think the outdoor cost would be greater. As I said before we should somehow make it to where there is a week where we can offer tax free.
12. Construction workers are the ones I would worry about the most with manufacturing such as Mobile home manufacturing that has outside workers these are the main industries, I would be a little harder on until they got the message, they are not untouchable. Grocery stores, small discount stores, business's that are inside establishments I wouldn't worry about especially in the south because as I have said previously, we have A/C in every building, but I would put provisions in the rule to be sure that under certain circumstances these entities are to follow the law just as anyone else, i.e. hurricanes, power outages, instances where the a/c is out and the employees

are still working as emergency workers, the employer should still be responsible for the employee's safety.

13. I really do not think any employer should be excluded, simply because even health care workers work outside at some point or another, take the pandemic for instance healthcare workers were outside relentlessly doing COVID swabs. The heat was real down here in the south, I sat through a few of those lines and in the heat of the summer had we not had a/c in our cars it would have been bad. But the doctors and nurses are still out there doing what they do in the heat. Now, I am sure they had a protocol to follow on heat stress but if OSHA had not started heat awareness the protocol would not have been in place. So, exempting anybody from this could create a future problem where there shouldn't be one, due to misinterpretation.
14. Short duration exposures should be excluded when they only work 15 minutes every hour. As far as those who are under the 29 CFR 1910.156, are already protected by the law. Those 29CFR 1910.120 should be excluded only because there are provisions in the law that protect and require a site-specific safety policy, so the law would apply after it is implemented.
15. I have already created the HIIPP for my place of employment but that does not mean that I can't improve on it. I have created a heat stress chart to keep as a report to show that we are being compliant when necessary. I used the NOAA Heat Index to find out the feels like temp and acted accordingly. If the temp was in the red, I would announce over the radio to all supervisors, team leads and plant managers, that "today is a heat stress day be sure the employees are taking required breaks and any breaks necessary to make sure they are not over heating". I also walk the plant every other hour and check on the employees that are outside workers to be sure they are not overheating and that the supervisors are giving them the required breaks. It probably took me a week to get it written up, and probably 2 weeks to get it in action, because the higher ups did not see the reason for it, until there was a reason. It is a shame and hard for us as professionals to create a policy and try to put it in place only to be told that "if the law does not require it we do not need it."
16. First, I determined that we needed a heat stress plan, because the employer when I first started here was not worried about the employee because they took a break every 2 hours and 45 min. Then I started to research heat stress plan templates I found one I could use here and printed it made all the adjustments on paper, then redid it to the adjustments that I made. Then I

introduced it to the employer and plant managers this is where I got most of my

IIILBT

PLATINUM TANK

LBT, Inc response/answers to the SBAR questions related to OSHA's proposed Heat Injury and Illness Prevention Standard- OSHA-2021-0009-1059

General Comment: Any standard developed must be inherently flexible to accommodate the wide variety of workplaces/businesses that this would cover for them to be able to protect their employees while being able to operate. What works for one business or industry may not work well for another i.e., foundry vs manufacturing plant versus construction, etc. Additionally, there is a wide discrepancy in temperature and humidity between different parts of the country and even within states themselves. Anything too prescriptive will handcuff employers, especially small businesses, and could make it exceedingly challenging if not nearly impossible for various businesses to comply with and still operate.

General Topics

1. LBT does not have any occupations that would be considered an outdoor occupation. Except for occasional exterior maintenance work, warehouse or other workers retrieving or placing materials or some sub-assemblies, occasional unloading of materials or similar or moving completed trailers, all work is indoor. Approximately 98+% of work is considered indoor and includes welding, fabrication, material handling, assembly, wiring and testing of tank trailers and other bulk cargo trailers. Welding can be external or in a confined space.
2. Employees who could work outside, typically spend less than 1 hour/day outside. The remainder work inside only. Welders may have intermittent exposure to a heat source for up to 10 hours if working overtime. One welding position (1- 2 employees) has more potential for more continuous heat exposure within confined spaces due to the manufacturing process. The remainder of employees are not routinely exposed to heat generating equipment.
3. LBT has no issues with classifying indoor or outdoor work.
4. Various geographical considerations need to be considered. Temperatures vary between States and even within States as does humidity (Gulf Coast vs Las Vegas as an example). Some areas of the country would be routinely above one or both thresholds for multiple months. The impact of a 95-100F Heat index day in late July in Houston on workers may not have the same impact as a day with a 90F Heat Index in Minneapolis or Detroit. Both would be in the High Heat Range given by the proposed standard, but the Houston workers covered by the standard would tend to be more acclimated to it, so procedures and requirements would likely need to look different or have different High Heat levels based on geography. Allowing the use of temperature only in some areas is highly misleading, especially with the 87F HI versus 90F temperature only. Omaha for example can and does have heat indices of 87F or higher with ambient temperatures of 82-84F. At 89F, which would not be a high heat by air temperature, can have a heat index up to 99F. Appendix A contains 2 tables containing data taken from NWS online reports that show the wide variations in temperatures in the US.
5. Yes, we currently implement measures listed though some are at a different temperature level or frequency/duration than what is listed in the regulatory framework. The following have been effective:
    a. Employees have access to water as needed and electrolyte packets are available to them.
    b. On high temperature days (using internal thresholds for heat index levels), we may implement extra break(s). Our protocol for extra breaks provides an opportunity for managers/supervisors to observe or check in with each employee during that break.
    c. Based on Heat Index in the plant, afternoon overtime may be restricted or canceled.
6. N/A

7-11 Regarding Table 3 in Section III, I believe that to Review and modify HIPPP-existing programs in place will take 3-5 hours, potentially more as this cannot be done in a vacuum and will require time working with employees for their involvement. Regarding review and update by the designated person, it will take more than one hour,

especially if they are working with the employee participants, then by default you are at 1 hour. In addition, there may be the need to make changes, etc. so should be at least 2 hours. In addition, if significant changes are required to how we operate regarding breaks then the total time commitment for both management and employees will be greater than what the table shows, especially as will most likely have to negotiate changes or impacts of the final rule with the union.

For Table 4, I believe the initial hazard assessment could vary widely by industry so 8 hours may be low for several industries but is hard to put a time commitment on it. Regarding time for measurements seems reasonable, but keep in mind, that dependent upon the workplace several measurements may be required each day.

For Table 5, I believe the indoor values to be very low. For example, our facility, which typically has 90-100 shop floor employees, is a 225,000 square foot facility. Some manufacturing facilities, like our facility, do not have a "fixed workstation" as they are not working in a fixed spot, but instead may be moving around in a larger workspace. Using our facility as an example, they may be working around a partially complete to completed tank trailer which so their work area may be 70' x 35' or more, with various items and issues that impact fan placement. This requires multiple fans per 2-person workstation, and they cannot be fixed/mounted. Also, this is not a one-time cost, especially if a facility is unable to utilize fixed fans. Fan and cords can and do get damaged when moving them around. Even fixed fans can get damaged or have mechanical issues. This creates an ongoing maintenance cost which is not captured. If AC units need to be added, it is not a one-time cost. They have ongoing costs for preventative maintenance. If installed specifically for compliance with this proposed standard, other costs are also not well captured. Given the EPA on-going changes regarding Green House Gas emissions, there have been and will continue to be impacts to refrigerants used. Due to current and potential restrictions, a unit may need to be replaced sooner than normal life expectancy, as the refrigerant is not available or has become too expensive to recharge.

For Table 7, given the size of some manufacturing facilities that are small businesses, such as ours, 1 plumbed water dispenser would be impractical. To adequately provide readily available water using a plumbed system, it would require several water dispensers and associated piping. Depending on the dispenser, other ongoing costs like filter, etc. may come into play. Standalone water coolers can solve this but may require additional electrical wiring as well for some places.

For Table 8- In manufacturing and other industries, especially in warmer areas of the country, day shift and especially swing shift would be impacted based on the proposed acclimatization. The assumption that in manufacturing or other industries that 50% of non-heat exposed time doing other tasks is not realistic. Other than initial training, often there is no other work for them that would fit non-exposed requirements. Employers should be allowed to develop their own protocols to acclimate new employees. Depending on the length of on-boarding for a new hire, it could be between 2-8 hours depending upon the company. In our case it takes about 10 hours between Safety and HR. However, we would not want to send a partially trained employee on to the shop floor so training would need to be completed prior to being in the work area. Using a company that has a 4-hour onboarding/training for an employee going into a work area that requires the proposed acclimatization schedule. Day 1- 20% is 1.6 hours + 4-hour onboarding is 5.6 hours. Either the employee does not get paid for 2.4 hours or you require an employer to pay them for that time. On day 2 (40%), an employee would be at 3.2 hours of work, and 4.8 hours of unpaid time or pay for not working, etc. By day 5, you are looking at a total of 12 hours of either unpaid time or paid time for not working. In our case, due to our training, it could be higher than that. For returning workers, what is considered the amount of time away before the provisions are triggered will be very important. For a standard 8-hour shift, using the 50%, 60%, 80% proposed plan, this amounts to 8.8 hours (4+3.2+1.6=8.8 hours) They would either need to use PTO, not be paid or company force to pay for 8.8 hours. If they typically work 10- or 12-hour shifts this is higher and could require them to lose out on OT pay as well. The financial impact on smaller companies due to this would be more significant in many cases than to

larger companies. Additionally, this will have a potentially significant impact on cultural events, such as art fairs, musical festivals etc. Often, they hire temporary security or food vendors have individuals who may not normally work outside which using this formula, would not be practical.

Continuing with Table 8- for acclimatized during a "heat wave". The heat wave definition is going to be very critical. The preferred method is to allow companies to develop their own protocols. If required to use the 50%, 60%, 80% then a company would potentially have to shut down operations which has a financial impact to employees and employers, especially smaller employers who cannot afford these types of interruptions. Some industrial operations do not take well to ups and downs like this and coordinating down time between a day shift and a swing shift would become problematic if day shift is required to stop operations at noon or 1 (or even earlier) and swing shift may have not be in until several hours later. This could occur 2-3 times (or more) in a summer. This could also severely impact summer camps, pools, and a variety of other outdoor based companies like amusement parks as well. Using the proposed heat triggers, the impact using the percent acclimation could be extremely hard to manage and still operate in certain areas of the country.

Regarding Table 9, the time may not be properly captured. First it assumes 8-hour shifts, which are not always the case. Second, some areas of the country will be above the heat trigger routinely for three or more months per year. If an employee is working between 8-9 hours as a normal shift or picking up a little bit of overtime, then a required 10-minute break no longer makes this feasible. The table shows only the actual time break time. The documents state that OSHA is considering that donning and doffing PPE and walking to and from the cool or shade area is not to be counted. This could therefore increase the actual break time to 20 minutes (or more) per break. In a large facility or large construction site, it could take 5 minutes to get to a designated spot and another 5 minutes to return. We believe a flexible approach based on the workplace is better for this assuming water is readily available and is accessible as needed. Employers may decide to forgo OT for employees which can impact employees. Employees who routinely pick up ½ hour to an hour overtime per day, may find that this is no longer an option. Again, this can have a larger impact on smaller businesses from an operations standpoint, especially when looking at how the labor market has changed since 2020. Potentially reducing overtime will impact multiple industries as well as employees.

Table 10- Note that in some areas the initial heat trigger will be every day or nearly every day for potentially several months. Additionally, if employee break areas are spread out in a facility or operation or have staggered break schedules, the time estimate for the designated person is potentially underestimated by 2 or 3 times. The estimated time of one minute for an employee checking in appears to be low but is probably not more than 3 minutes per shift.

Table 11- Like the issues in table 9 noted above, the mandated 15-minute approach could severely impact both workers and companies that operate either with overtime or run 10- or 12-hour shifts. Even if the high heat trigger is not hit until noon or later it could still trigger an extra break for a company based on how they currently have their lunch and breaks worked out. As noted above, the actual time lost is not adequately captured. In this case 15 minutes could be up to 25 minutes or more due to travel, donning and doffing, etc. Swing shifts will be significantly impacted. Smaller employers will probably see a larger impact. Regarding supervisor/designated person check in time in high heat or heat wave, as noted earlier, this appears to be low based on my experience on checking in, especially in larger footprint manufacturing facilities. Regarding the pre-shift notifications, since in many cases high heat will not be an issue for first shift until later in the shift, the meetings would still need to be conducted anytime time the high heat trigger is expected to be exceeded, otherwise waiting until it occurs would be too disruptive to an employer. Also as worded, the pre-shift meeting seems to be required every day of high heat. Possibly consider weekly or every other day, etc. in a place like Houston, it the message could

quickly become lost/ignored if you are required to cover the same thing to the same group of people every day for weeks.

Table 12- appears reasonable, though other approaches than a tub may work as well.

Table 13- Until the actual rule is final, it is difficult to determine the actual times, so numbers provided appear to be reasonable at this time.

Overall, some of the prescriptive requirements regarding time not working, etc. will potentially have significant financial impact to a small business if they are required to stop operations, restrict operations, etc. Depending upon who is responsible for the required time away, it will either be a cost to an employee and/or a cost to the employer, which can be very impactful for both. Small entities also do not always have full-time safety personnel. It is just an ancillary duty to someone who is already burdened with other things, like HR. Depending upon final specifics, it could be difficult for some entities to manage certain of the proposed items or require additional headcount.

Scope:

12. List at this point appears to cover all of them

13. At this point, I do not see any changes needed

14. A better definition of sedentary will be needed. Is an employee who sits and feeds a punch press with small parts sedentary/light activity? With all the varieties of activities in manufacturing and other business segments, this exemption, which we do support, needs very good clarity so both inspectors and the regulated community understand it or there will be too much gray area. Additionally, this is important for smaller companies to have a very clear understanding as their operations tend to require employees to multi-task more, versus having a person, just pushing a button on a machine, or just feeding parts, etc. Though we like the concept, there are a couple of issues regarding sedentary/light work for those organizations (ours included) that have a wide variety of tasks/jobs. You can end up with discrepancies in areas where a new hire in one area would need to follow acclimatization due to task, where another would not. Example, our Body and Wire department may potentially end up being deemed sedentary, yet 50 feet away from them, a weld stall is not sedentary. This could create both differences in break schedule and who potentially would be required to have a shortened shift. This could be even more challenging in a union shop like ours as we would guess they would want everyone treated the same way on breaks, etc. so this exemption is no longer useful. However, in certain places it still would have use I believe. The other exemptions I believe are good and very workable.

Heat Injury and Illness Prevention

15. N/A

16. The steps we took (in no particular order) to develop the program included:

    a. A review of NIOSH documents and information from other sources

    b. Review of incidents, historical experiences, etc.

    c. What would be workable from a production standpoint

    Though different in some respects from the items covered in the SER Background Document, our program utilizes the following elements discussed in Section II of the document.

a. A general assessment of work area with limited differentiation between jobs
b. Measurement of Heat index using 3 temperature/humidity sensors that send readings to a base station in the First Aid Room.
c. Implementation of protocols based on the calculated Heat Index in the plant.
d. Some documentation of levels began this year. In the 3-4 years previous, Heat Index was monitored, and actions taken, but actual values not recorded.
e. Tracking of forecasts to predict when we may have heat issues.
f. Heat triggers (values are different than proposed. We have actions based on the following Heat Index ranges -less than 90, 90-94, 95-100, 101-104, 105+).
g. Actions taken include based on Heat Index include:
    a. Overtime:
        i. may be restricted to early mornings only.
        ii. Certain tasks/jobs may not be able to be done during afternoon overtime.
        iii. Restricted to 1 hour from the normal 2 hours in the afternoon.
    b. Breaks
        i. Implementation of short hydration breaks (5 minutes or 10 minutes} depending upon level. (Note these are normally done in work centers, with fans available in those work centers). Frequency varies by Heat index level.
        ii. Passing out popsicles by managers/supervisors allows them to assess each employee.
        iii. Ability to stop to get water as needed during the day.
    c. Restricting or prohibiting certain job tasks depending on Heat Index.
    d. Try to conduct certain activities in the morning.
h. Water availability via water coolers in the plant. Electrolyte packets available to employees
i. Provided new insulated beverage containers to employees.
j. Added additional fans, including large ceiling fans and evaporative cooling fans.
k. Vortex cooling on any supplied air helmet use
l. Initial and annual heat training for the plant, including supervisors and managers.
m. 1st aid protocols including:
    a. Thermometer for employee temperature
    b. Ability to ice employee down using bags of ice.
    c. Vest with cold packs to rapidly cool
    d. Moving to lunchroom or 1st Aid Room which are climate controlled.
    e. Hydration protocols
    f. 911 protocols

The steps required to update the HIIPP would be dependent on how prescriptive the standard it. It may/would require:

a. Review of the standard
b. Employee involvement
c. Additional workplace assessments
d. Changes to threshold for actions
e. Make other changes and updates as needed.

Time required for management could be 5 hours or could be 15 hours or more.

17. We have included employees for certain programs. It included review and/or input. In some cases, it did help with either clarifications or simplifications.

18. With our plan, we have more flexibility as we have multiple tiers and can always utilize activities from higher heat levels at lower levels as needed. Implementing the popsicle/employee check helps us to better assess employees. Adding the monitoring in the plant has helped get a true feel for plant conditions as they can be better or worse than outside. More supervisor awareness also has helped.

19. Only metrics we can really use regarding either as 1st aid or more serious requiring off site treatment. Since we implemented the plan, we have seen a reduction in both.

20. It has reduced work comp costs and maybe helped with absenteeism. Not sure it has impacted employee turnover or employee satisfaction. It appears to have improved safety.

Hazard Identification and Assessment

21. We did an initial, general assessment and high-level look at a couple of obvious higher risk hazards. This only took about 4 hours of management time. To do more detailed it could take significantly longer.

22. We are currently monitoring temperature and humidity inside the plant. We have a weather station from La Crosse technologies with 3 remote temperature/humidity sensors placed in the plant. The cost to replace today would be approximately $70. Note that due to size of facility, range limitations and interferences we had to pick the best 3 locations to get consistent signal and be as representative as possible. It takes 30 seconds to read all 3 since all are displayed simultaneously. If using the NOAA chart and exact number is not needed, then all 3 can be converted to Heat index in about a minute. If using the NOAA online calculator for more detailed values, then about 3-5 minutes to open website, enter all values and another minute or 2 if recording in a spreadsheet. We check them at least hourly when we are in a heat advisory/warning. If not, based on forecast and understanding of plant response to outside heat, we may not have to monitor until mid-morning or later.

23. We had to consider residual heat at the start of shift. With our building being shut up from mid or late afternoon and overnight it can take a while to cool back down to outdoor ambient temperature, even if we open it up at 4:445 in the morning. Example from this year during high heat- 7 am outside Heat Index 83, inside the plant, 91. Plant had multiple large overhead doors open and fans, etc. moving air starting at or before 4:45 am. Plant started approximately 3 degrees warmer than outside ambient temperature. Assessments need to understand that you can start off higher and have a cool down then come back up to temperature. The biggest difficulties on assessments are trying to consider the following while developing or implementing controls/ preventative measures:

a. Employee health. Due to HIPPA, etc., we do not know who may be diabetic or have other medical conditions or are on medication that can make them more susceptible to heat injury or illness. Designing controls that cover everyone all the time with little to no risk can be challenging, especially for a small business with limited financial resources, workers, and less management/experience in this area.

b. Even with training, it is hard for the employer to manage employees whose diets may or may not impact them negatively in the heat. This includes the use of highly caffeinated products and/or energy drinks which can negatively impact the employee in the heat. Both can directly lead to heat illness and injuries that can be very challenging for an employee to prevent. We had an experience this summer with an employee who had too many energy drinks and not enough food and water.

c. Along with b above, it is also hard when making assessments and implementing controls to be able to fully account for employees after work activities, including a second job, a hobby, partaking in alcohol or other substances, all of which can impact the person the next day and set them up for an issue.

24. We would not rely on outside temperatures/humidity for us. We have enough experience, having monitored inside and outside temperatures and humidity. We know that relying on measurements from the closest NWS weather station or forecast will not adequately reflect interior conditions within the plant. Most often it would trigger high heat protocols when it would still potentially be below the high heat trigger. Though first thing in the morning, the plant may be above outdoor temp and heat index, usually by noon we are usually 2-8 degrees below outdoor temperature and potentially more when looking at heat index.

Engineering Controls:

25. We utilize 6 large (> 12 foot diameter) HVLS ceiling fans, in addition to floor fans, including evaporative cooling fans, and small ceiling fans. We open most of the large overhead doors to facilitate natural ventilation and can use roof vent fans as well. We utilize vortex cooling for the supplied air helmets in 3 work areas where this PPE is required. One maintenance area has a small repurposed portable AC unit as it does not benefit from other ventilation. We do have to be careful regarding the HVLS fan positions so as to not negatively impact the ambient air scrubbers.

26. N/A- minimal vehicle use. Plant pickup is used sporadically and has A/C. Shag truck use is typically used less than an hour a day.

27. In addition to the office, the lunchroom/training room has AC as does the upper employee locker room/weight room/ small break area, but the other in-plant break areas only have fans. It is not feasible/practical to enclose these areas and make them into air-conditioned spaces. Most heat is generated from welding, so PPE protects from that heat, but employee retains heat. We must watch how much air movement is occurring as it can remove shield gas, creating welding issues and placement can impact how the welding fume moves, potentially increasing exposure. We must manage where employees locate fans, especially since they need to move around their various sized work pieces as their movement changes where they are in relation to the fan(s). This is where one engineering control can disrupt or negatively impact another engineering control.

Water

28/29. We utilize water coolers indoors as it is easier to locate more stations closer to the worker than it is to plumb faucets, etc. for them. These accommodate around 100 employees. We have approximately 8 water cooler stations for employees to use, plus 2 commercial sized ice machines that employees can use to get ice for water, electrolyte drinks, etc.

Protection for Unacclimatized Workers

30. Yes, I believe indoor and outdoor are different regarding challenges and how you may need to approach acclimatization. For one the type of work is usually different. Also, inside may be more controlled (a foundry or commercial oven has a known and usually consistent heat hazard) where outside it can vary by location, wind present or not, clouds, etc. Smaller businesses tend to have less resources from a management and/or a financial standpoint. A large construction company may be able to afford air-conditioned trailers at some or most large job sites. A smaller company may not be able to afford this. From an indoor perspective they may not be able to

afford to install air-conditioned cool down locations whereas a larger company can. Larger companies also tend to have the resources to be able to manage and oversee new workers who are not acclimated where small businesses may not have the same management/supervisor resources.

31. The benefit is hopefully a new employee will be less likely be impacted by heat if proper acclimatization is conducted. The cost will be additional supervision and depending upon the method, potential loss of income to an employee with lost productivity to the company and potentially wages if employer is required to pay for time away from heat (which often will be at home). This is compounded if employer is required to pay for the away from heat time and the new higher decides to quit within the first couple of weeks or does not work out. Especially for a smaller employer this can be impactful to the company.

32. In our company there are no alternate task options for that allow for "non-heat" time, whether coming back from a long period of being off work or a new hire. Having worked for multiple companies, I see this being a challenge for many of them.

33. We monitor the employee more and typically limit how much strenuous work they may do the first couple of days (depending on the job role). Returning employees may have restrictions which can help with the physicality during the acclimatization time, but we do not restrict or limit regular working hours due to acclimatization. Acclimatization based on the proposed thresholds could occur anywhere from May to September for our company, depending on the weather. We looked at the job task, what they were doing prior to coming to us and forecasted weather to see if we may need to limit certain physical work, but they would not be removed from the work area, just the physicality/intensity of work may need controlled.

Rest/Work

34&35. Note that we are a Union facility. Our current lunch and break schedule is a bit unique. Normal start time is 6:45 am though voluntary overtime can start as early as 4:45 am. Break is 15 minutes at 8:45 am with a 3-minute stop work/clean up bell at 8:42. Expectation is back and ready to go at 9:00 am though realistically it is usually 9:05 before everyone is back in their workstations. This break is paid. Lunch is 12:30 pm-1:10pm. 30 minutes is unpaid, and 10 minutes is paid. Normal quitting time is 3:10 pm though they are paid through to 3:15 pm. Essentially the afternoon paid break is split with 10 minutes going to lunch period, which allows employees to leave site to get food and 12:30 can help with avoiding noon rush at nearby fast-food restaurants. The last 5 minutes is added to the end of the day, so they get 5 minutes of pay (3:10pm- 3:15pm)

36. If after lunch the Heat Index in the plant reaches 95 before 2pm then we typically have a short (informally around 5-minute break) in the work area somewhere between 2pm and 2:15 pm to make sure employees are staying hydrated. This is done informally as supervisors and managers go around to each workstation during this time to pass out popsicles and check on employees. This is halfway between lunch and the end of shift. If 95F Heat Index is reached prior to lunch time, then depending upon when it is reached, we may have a short break second break in the morning prior to lunch. If working OT above 95F, then typically they get a short 5-minute break between 3:10 and 3:15 pm in their work areas. There is not an additional formal break time for OT. A Heat Index of 101 F triggers a 5-minute break every hour it is over 100F. At 105F and above triggers a 10-minute break every hour. Employees can stand/sit in front of fans/evaporative coolers, get water and/or ice. With the 10-minute break they would be able to go to the lunchroom as well. Note that for a Heat Index of 101 or above there is no afternoon overtime. Work ends at 3:10 pm. Note supervisors and managers also make the rounds to check on employees for the 101 and 105 trigger points as well.

37. Right now employees are allowed "micro breaks" to get water and/or ice as needed. As we do not reach our upper limits that require 10-minute breaks very often (0-5 times/year) this has not been too disruptive. Normally

we hit 95F in the plant less than 15 days per year, which triggers our short informal 5 minute or more formal 5-minute break. However if we are required to use 87 or 90F as a Heat Index trigger point (which would be almost every day in the summer) for 10 or 15 minute break, this could impact us on several mornings and would definitely impact overtime, and would make 1 hour of overtime impractical due to the percentage of time a formal break would take, especially as noted previously that doffing/donning and going to a location would be in addition to the 10 or 15 minutes. Doing this at the lower trigger of 82F would be completely impractical. Depending on what is ultimately decided, we may need to completely change the lunch and break schedule which is set in our contract with the union.

Supervision/Observation

38. Employees are observed by supervisors, leads and managers informally starting at 90F Heat index. Employees or specific tasks may be spot checked during rounds, etc. Starting at 95F as noted previously we hand out popsicles, which then allows the supervisor or manager to conduct a quick assessment on each employee.

39. Best practices for us includes:

a. Supervisors and managers checking on employees while making rounds in the pant/work areas.

b. Leads checking on employees in their areas throughout the day.

c. Supervisors and Managers checking on employees during the handing out of popsicles.

d. Ability for employees to communicate directly or via phone to a lead, supervisor, or manager if they are having issues or notice another employee having issues.

We believe that this has helped with reducing heat illness issues in our plant.

40. We use face-to-face or the ability to contact a supervisor or manager by phone.

41. I believe that this varies by workplace/situation. If you have 25 or 30 people in a small area, then 1 designee or supervisor should be able observe them. If you have the same 25 or 30 spread out over a large area or multiple locations, then you may need to several more to observe on a more continuous basis.

Other Administrative Controls

42. Not applicable to LBT, Inc.

43. During high heat we recognize productivity will decline. We try to have any overtime take place before shift versus after shift and will eliminate or restrict overtime in the afternoon as needed. We try to have certain tasks carried out earlier in the day when possible and may not allow some tasks during afternoon overtime during higher heat days. We may ban certain tasks once a designated Heat Index is reached. We find that the combination of these appears successful for us. Our system is flexible enough to allow us to operate while reducing the risk of a potential heat injury or illness.

PPE

44. For 3 operations the operators have the option to use a vortex cooling system that is part of their supplied air hood/helmet. This provides cooling to them and is available for use year-round. We did provide employees with cooling towels a few years ago but ran into an issue that if employees do not keep up on them staying wet then the towels tried to pull moisture/oils from skin and created irritations around the neck. Since then, employees can use their own, but we typically do not supply them. Additionally, the time estimated in the SER Background

Document on how long they last and time it takes to wet them is extremely optimistic from our experience. Employees tend to only get 1- 2 hours and they must go to the restroom to get water to wet them, so it can take 5 minutes of time or more.

45. For our bead blast operation, the employee has a vortex cooler on the supplied air helmet. As this is not a full-time task, we work to schedule operation of it during the morning when it is cooler. For Paint Booth, we also have a vortex cooler for the supplied air hood. They are in Tyvek. The unit is operated by a contractor and only runs 1-2 days per month at most. We try to schedule around the hotter days. For the Upender unit, we have the vortex cooler on the supplied air welding helmet, in addition to good ventilation. The employee in this task can take breaks as needed. Employees who may be wearing welding jackets can take water breaks as needed and normally have a water bottle in their work areas.

High Heat Procedure

46. We do not currently hold a routine pre-shift meeting for operations. This can be difficult as we have some workstations that may have overtime starting 1 or 2 hours before normal start time which scatters them out in the plant. Also, it is hard to always guess which days could hit this level. The supervisors typically do rounds first thing after normal start time to check on employees and discuss things with the leads, but this is not a pre-shift meeting. Maintenance does often have a pre-shift meeting and heat can be included in this meeting.

47. Currently direct communication either from leads, supervisors, or managers. Note that during the summer we also have a slide or two on our electronic message boards about heat.

Medical Treatment and Heat-Related Emergency Response

48. We have emergency response procedures for a variety of activities, though it is kept general. We cover various injuries, illnesses (including personal issues like stroke) and confined space rescue. We would need to modify the plan to include more specific details regarding heat emergencies, depending upon final rule.

49. Depending upon symptoms being presented we have a variety of options. Supervisors, several managers, leads and safety committee members are First Aid/CPR/AED trained. For those cases appearing mild we will bring them into a cool area and provide water and/or electrolyte solution. For mild or more serious cases, an ice vest and ice packs can be used to cool an employee down. For severe heat exhaustion, apparent heat stroke or other serious heat illness or injury, 911 will be called in addition to proving cooling and hydration. We have an ear thermometer to be able to check temperature. Typically, the Safety and Environmental manager or designee, would need to approve return to work after cooling down.

50. We have multiple 1st responders who are First Aid/CPR/AED Trained. Team is led by the Safety and Environmental Manager

51. Yes, we have had a few serious heat-related illnesses in the past. In all but a couple of cases we managed the cooling down on site using a combination of fans, ice packs, air conditioning and hydration. These incidents occurred prior to our heat illness prevention policy being implemented a few years ago. A couple required off site treatment for dehydration/electrolytes out of balance.

Worker Training:

52. We conduct heat injury/illness training. Initial training includes a video on heat illness/injury and a short discussion on our program here and emphasizes points made in the video. Training covers signs, symptoms, and ways to prevent heat injury or illness as well as reporting issues. Annually we have a refresher training over the

same topics, typically in April, prior to it getting hot. First Aid people get additional heat training as part of their certification every 2 years. In addition, information is on the message board in the summer.

53. All employees receive some level of training in heat illness and injury. Some office personnel only receive minimal training as they are not typically exposed to heat and do not manage personnel in the heat. Currently supervisors do not receive any additional formal training, though additional informal discussions do occur.

54. Currently any vendor on site, including our contract maintenance company which handles crane repair and other large equipment install and maintenance is responsible for their own program.

55. We typically do not provide training in anything other than English currently, however we have trained in Spanish in the past for a couple of employees.

56. We looked at when we typically have had high heat and decided annual training just prior to it getting hot was appropriate to remind employees of the hazards, symptoms and how to prevent heat injuries/illnesses. In addition, new hires need this as well. Regarding more frequent training, if we are seeing or hearing of issues, we can do additional training as needed, whether to whole plant, or even one or two individuals depending on need.

Recordkeeping:

57. This summer we recorded hourly temperatures during normal working hours in conjunction with the 2 periods of excessive heat we experienced. Prior to this, no formal recordkeeping was conducted and no formal recordkeeping for days this summer, just for those 7 days of excessive heat.

58. Regarding heat injuries and illnesses, we record 1st aid (if a First Aid team member is involved) and recordable events. It is possible for mild heat injury or illnesses such as dehydration, an employee could manage it without reporting it. We typically have not recorded environmental information for these events which have not been frequent. To start collecting environmental data, if we were not already doing so, we would need to change our procedures and train responders to collect the data, so it iss captured and either update forms to record it or develop another system to capture the information. We do not track heat acclimatization, which would require additional tracking measures in conjunction with management of the process.

Communication on Multi-Employer Work Sites:

59. We do have a contract maintenance contract company that provides various services to us. Often time they are working when the plant is down, so we are not here to oversee them. They know our basic work rules/requirements and follow their own policies as well. We do not typically communicate heat hazards to them as they have the freedom to manage themselves regarding breaks, if heat levels for their work, etc. Most times the contract company's owner is the one doing the work. Regarding the contract painter, he is informed of our policies, etc. as it relates to his job, but heat is typically not a part of this currently.

60. Depending upon the company and types of contractors on site, it could be a challenge to manage, especially for a smaller company who relies on contractors for several things, including maintenance. Managing staffing agency personnel who work productions, etc., should be straight forward for a company regarding heat, etc. For more specialized work, especially project based, it could be more of an issue. Example, we had plumbers replacing on site fire hydrants this summer. We left managing heat stress to them as it relates to what they are doing. This would be the same if we brought in a contract electrical company for repairs or project work. It could be difficult if not impossible on many worksites for a company to know if contractor employees have been or need to be acclimated. If, for example, a small manufacturing plant brings in an electrical and a mechanical contractor to do work to install a large piece of equipment, how is that company to easily know if the employees of either company are acclimated? Another example is if they hire a company to re-roof the building. If the plant

itself is exempt because of air conditioning, then they will not have much expertise and probably no specific management program in place for events like this. Smaller companies who bring in these types of contractors may also not have the personnel or expertise to manage them. That is why they are being brought in to do the work.

61. N/A

Safety and Environmental Manager

LBT, Inc.

IIILBT

PLATINUM TANK

Attachment A

Monthly Mean Max Temperatures (F)- from NOWData-
NOAA Online Weather Data 2000-August 2023

Location	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Seattle, WA	47.5	49.2	53.8	58.8	65.4	70.9	77.2	77.6	71.3	60.8	51.8	46.2
Fresno, CA	59.3	64.8	70.6	76.4	84.7	93.2	99.3	97.6	91.8	80.1	67.2	59
Oakland, CA	60.6	62.8	64.5	66.3	68.7	71.8	71.4	73.3	75.2	72.7	66.1	59.7
Las Vegas, NV	58.9	62.9	71.2	79.6	89.2	101	105	102.8	95.6	81.2	67.7	57.1
Kansas City, MO	39.7	42.8	56	66.5	75.3	84.9	88.6	87.8	80.2	67.3	54.7	42.8
Oklahoma City, OK	50.9	53.2	64.4	72.3	79.8	88.6	93.9	93.5	85.6	73.6	62	51.6
Dallas, TX	58.1	60.7	70.1	77	84.5	92.6	96.5	97.2	89.8	79.4	67.9	59.3
Houston, TX	63.9	67.1	74.4	80.1	86.8	92.6	94.3	95.4	90.1	82.8	72.7	65.6
Baton Rouge, LA	62.9	66.8	74.2	79.7	86.4	91.2	92.3	92.7	88.9	81.5	71.7	65
Omaha, NE	34	36.8	52	64.5	74.5	84.9	88.1	85.9	79.4	65.1	51.1	37
Mobile, Al	61.9	65.9	72.8	78.4	85.3	90.1	91.1	91.1	87.9	80.4	70.9	64.2
Orlando, FL	69.2	72.5	76.4	80.7	85.3	88.9	90.2	90.4	87.6	82.9	76.3	72.1
Greensboro, NC	49.2	53.6	61.7	71.1	77.9	85.3	88.1	86.7	80.5	71.1	60.9	52.3
Detroit, MI	32.8	35.1	46.7	59.3	70.7	80.1	84.1	82.3	75.3	62.4	49.5	37.4
New York City, NY	39.7	42.6	50.7	62.3	71.5	79.6	84.9	83.6	76.7	64.8	54.5	44.6
Minneapolis, MN	24.4	27.3	42	56.5	69.4	80	84.6	81.5	73.8	58.2	43.3	28.3
Des Moines, IA	32	35	SO	63.2	73.2	83.1	86.5	84.6	78.1	63.8	49.9	36.2
Nashville, TN	48.7	52.8	62.7	72.1	79.9	87.8	90.4	89.7	83.9	73	61.2	51.9

90F or Greater

82-90F

IIILBT

PLATINUM TANK

Monthly Mean Average Temperature (F)- from NOWData- NOAA Online Weather Data 2000-August 2023

Location	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Seattle, WA	42.4	43	46.5	50.7	56.9	61.9	67	67.6	62.4	53.9	46.2	41.6
Fresno, CA	49.7	53.4	58.6	63.7	71.6	79.5	85.8	84.1	78.6	67.7	56.2	49.3
Oakland, CA	52.9	54.6	56.4	58.1	60.7	63.6	63.9	65.6	66.3	63.7	57.6	52.6
Las Vegas, NV	49.5	53.1	60.7	68.4	77.8	88.6	94.1	91.6	84.1	70.5	57.7	48.3
Kansas City, MO	30.2	32.6	45.3	55.5	65.2	74.9	78.7	77.5	69.4	56.7	44.6	33.4
Oklahoma City, OK	39.5	41.9	52.6	60.6	69.2	78	82.6	82	74.2	62.1	50.5	40.9
Dallas, TX	47.4	50.1	59.4	66.6	74.7	82.9	86.6	87	79.6	68.6	57.5	49.1
Houston, TX	53.7	57	64.1	70.1	77.4	83.2	85	85.6	80.5	72	62.2	55.7
Baton Rouge, LA	52.2	56	62.9	68.5	75.8	81.5	83.2	83.2	79.1	69.8	59.8	54.3
Omaha, NE	24.7	26.8	40.9	52.6	63.4	74.1	77.9	75.7	67.9	53.9	40.5	27.9
Mobile, Al	51.2	55.1	61.7	67.3	74.6	80.6	82.2	82.2	78.4	69.3	59.3	53
Orlando, FL	58.7	62.1	66	70.7	75.9	80.5	82.1	82.5	80.5	74.8	67.2	62.3
Greensboro, NC	39.6	43.3	50.9	59.7	67.7	75.5	78.7	77.6	71.2	60.7	50	42.9
Detroit, MI	26.1	27.7	37.9	49.3	60.6	70.2	74.4	73	65.8	53.5	41.8	31.4
New York City, NY	33.7	35.9	43.3	53.8	63.1	71.8	77.4	76.3	69.6	58.2	48.2	39
Minneapolis, MN	17	19.1	33.6	47.1	59.8	70.6	75.3	72.5	64.5	49.8	35.9	21.6
Des Moines, IA	23.6	25.9	40.3	52.3	63.1	73.3	77	74.9	67.5	53.7	40.6	28
Nashville, TN	39.4	42.9	51.8	60.6	69.2	77.2	80.5	79.7	73.3	61.8	50.3	42.8

90F or Greater 82-90F

Olcese

WASTE SERVICES

September 29, 2023

Bruce E. Lundegren
Assistant Chief Counsel
US Small Business of Administration
Office of Advocacy
409 Third Street, SW
Washington, DC 20416
Bruce.Lundegren@SBA.Gov

Mr. Lundegren,

Thank you for the opportunity to represent small business as a Small Entity Representative (SER) on the SBREFA committee on September 7, 2023, for Heat Injury and Illness Prevention.

We are a solid waste and demolition business based in Mound House, Nevada, with 49 employees. We have been around since 1997. We operate primarily in Nevada, occasionally in California and Arizona. Our website address is www.OlceseServices.com.

I have a few take aways from this event that I feel are important to share with this panel.
The OSHA heat standard needs to be left up to the States to decide on what works the best for each individual State. With different climates in each State, they should be able to decipher the best approach for a heat standard if any. We as a Company, operate through the State of Nevada. Elevations can vary from 3,000 feet above sea level to 10,000 feet above sea level. These sea level variations also have a big effect on temperature changes as temperature cools off at +/- 3-degree Fahrenheit per 1,000 feet of elevation change. A 7,000-foot elevation change will result in a 21-degree change in temperature. How can the Federal Government know how to implement a heat index with all the elevation changes here in Nevada? Once again, it would be better for the State of Nevada to address heat issues rather than Federal Officials who have little to no knowledge of the State or the State industries, microclimate, elevation, humidity etc. This is why it needs to be left up to the individual states to determine the standard.

We as a company have never had a heat related recordable ever. I have talked with other industries, owners, and executives in the transportation, vertical construction and mining in Northern Nevada and no one has had a recordable to date regarding heat illness. So why do we need more regulation on heat illness when we have no recordables on heat illness?

In closing, as a small business owner, I would like to see the proposed heat standards be tabled. indefinitely and be left up to each individual State to deal with and adopt regulations as needed, as they would have better knowledge of what is required for their particular State.

Sincerely,

Tillio Olcese
President

Comment

Thank you for allowing me to participate in the Heat Injury and Illness Prevention SBREFA Panel as a representative of the Railroad Transportation Industry. There were a few things that were abundantly clear from our session. First and foremost, every SER on the panel clearly values their employees and strives to provide a safe work environment for them. The second takeaway was that all have practices in place for managing heat stress be they formalized in a written heat management plan or not. And the last item is that each of the industries represented in the panel had unique working and environmental conditions making a “one size fits all” regulation unworkable.

Is heat injury and illness problematic for the short line rail industry? There are more than 600 short lines around the country that employ approximately 18,000 resources. According to data provided by the ASLRRA there have been only 2 reportable heat related injuries during the last 5 years equating to an annual incidence of 0.0022%. This figure clearly indicates that the industry is already doing a great job of mitigating heat related illness and injury. Further regulation is not needed and would only add burden to a process that is already working well.

While the need for developing regulations on the subject is not merited for the railroad industry based upon the previous paragraph, I like the idea of formalizing heat mitigation practices for Farmrail. Each of our disciplines, Maintenance of Way, Maintenance of Equipment, Transportation, as well as Administration has their own unique risks and management approaches for heat. These should be documented, and I see these as an extension of our existing Safety and Emergency Response practices using the elements described on pages 8-9 of the SER Background Document for guidance.

From: Aaron Paulette <apaulette@elevatedservices.biz>
Sent: Tuesday, September 26, 2023 10:41 AM
To: Lundegren, Bruce E. <Bruce.Lundegren@sba.gov>; OSHA Events DSG <OSHAEvents_DSG@dol.gov>
Subject: Written Comments for Heat Injury & Illness SBREFA

All,

Thanks again for the opportunity to participate in this process. After hearing what everyone had to say, it seems that each industry is already dealing with this hazard in its own way. A blanket rule for all industries that would have any effectiveness does not seem feasible. Environmental conditions vary so greatly from one industry to the next that I cannot fathom how it would even be enforced. For example: The temperatures of a foundry worker's exposure can greatly vary even on the same side of their body. For our industry, a climber at 500' is in a much cooler place than the worker at the same location on the ground surrounded by trees. This situation alone shows that the temperature and humidity thresholds proposed in the materials provided do not make sense. How can we ask a climber to climb down hundreds of feet (the hardest part of his/her job) to take a break if they will in fact be doing the most physically stressful and dangerous task repetitively just to get back to their work station? Water is a key preventive measure to minimize the risk of heat-related illnesses. Employees will have access to adequate quantities of drinking water when exposed to heat. We have also implemented an onsite hydration monitor who is assigned the task of reminding everyone on site to drink water every 30 minutes.

Our industry's leading association, NATE (The Communications Infrastructure Contractors Association), has already developed a Heat Injury and Illness prevention program for our member companies to use. The document applies to all employees that may be at risk of heat illness and to all indoor and outdoor work areas where environmental risk factors are present. I have attached the program to this email.

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Thanks,

Aaron Paulette | President
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October 3, 2023

Mr. Douglas Parker
Assistant Secretary of Labor for OSHA
U.S. Department of Labor – OSHA
200 Constitution Avenue, N.W.
Washington, DC 20210

Re: Docket No. OSHA-2021-0009 – OSHA SBAR/SBREFA Panel on Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings

Dear Assistant Secretary Parker:

We wish again to thank the Occupational Safety and Health Administration ("OSHA" or "the agency"), the Small Business Administration ("SBA") Office of Advocacy, and the White House Office of Management and Budget ("OMB") Office of Information and Regulatory Affairs ("OIRA") for the opportunity to participate during the Small Business Advocacy Review ("SBAR") / Small Business Regulatory Enforcement and Fairness Act ("SBREFA") Panel ("Panel") meetings as Small Entity Representatives ("SER") in the early stages of the rulemaking process for a potential standard entitled, "Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings" (Docket No. OSHA-2021-0009). We participated as SERs during the September 18 and 19, 2023, Panel meetings, and submit our comments jointly as businesses with similar interests related to this rulemaking. We are pleased to submit the following comments, and very much hope that the Panel gives meaningful consideration to them as it develops and delivers its Final SBREFA Report.

By way of background, we provide roofing contractor services, including roofing, waterproofing, maintenance and repair, and inspections, on a number of projects in different parts of the country. Although our numbers fluctuate a bit, we tend to have around 35 and 65 employees, respectively. The common thread among us, as well as our fellow SERs and other employers, is that we are responsible employers who care deeply about our employees' health and safety. As we mentioned during our Panel meetings, safety is a core value of our company culture, and we treat our employees like family.

During the Panel meetings, it was evident that, like us, our fellow SERs, and we expect other employers, have significant experience implementing thoughtful and effective heat illness mitigation programs – both where required in State OSH Plan states, and on a voluntary basis – for years. We have learned valuable lessons about the practices and policies that most effectively prevent and mitigate heat illness, as well as those that are less effective or entirely ineffective. Based on this work, we also have an understanding of which efforts impose burdens that substantially outweigh any benefit and those that are unworkable or untenable at most workplaces.

The comments we share here represent our collective wisdom from our personal experiences, from what we learned from other SERs during the Panel meetings, and from

what we know of other like-minded, responsible employers. Our motivation here is to ensure that if OSHA promulgates a heat injury and illness prevention standard, that it is effective in its purpose – protecting workers from heat illness hazards – and reasonable in the burdens it places on employers, including small businesses.

GENERAL COMMENT[i]

1. *The Standard Should be Flexible, Performance-Oriented, and Centered on Training.*

More than any other comment we heard during all six of the Panel meetings, almost all, if not all, SERs repetitively and consistently stated that any potential standard must be flexible and performance-oriented because there is no "one size fits all" approach to regulating heat. We wholeheartedly agree. While employers have similar goals, their approaches, by necessity, are very different. Crafting the standard as a performance standard makes sense at least in part because of the diverse set of industries OSHA intends to regulate, but also because of the complexity associated with assessing and mitigating heat hazards. There are myriad factors relevant to determining whether heat is hazardous. For example, as set forth in the ANPRM, relevant factors include, but are not limited to: geography; air temperature; humidity; wind; direct sunlight; individual risk factors, such as gender, preexisting conditions (e.g., obesity, diabetes, hypertension, cardiac disease), use of certain medications or illicit drugs, age, fitness level, alcohol consumption, prior heat-related illness, and lack of access to air conditioning in housing; physical exertion; the ability of surfaces to absorb heat; PPE; heat-producing processes and equipment; climate control; placement of windows; and the vulnerability of the energy grid. *See* 86 FR 59309 (Advanced Notice of Proposed Rulemaking for OSHA's Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings ("ANPRM")) (October 27, 2021) at 59319. Based on the factors that OSHA has determined are impactful and relevant to this hazard, even within the same industry or company – and at times even within the same ***facility*** – there can be still substantial variability with respect to hazardous levels of heat.

Additionally, there are countless effective approaches to address heat hazards. While there are some common threads in the approaches employers utilize to mitigate heat hazards – namely, implementation of administrative controls and provision of robust employee training – there are many more differences. For example, while some employers may be able to implement the "Rule of 20%" for purposes of acclimatization, others, as many SERs mentioned, may not. Additionally, although some employers may be able to install new or upgrade existing air conditioning systems, for others, particularly small businesses, as discussed at length by SERs,[1] including specifically during the September 12, 14, and 18, 2023 Panel meetings, this would be cost prohibitive and/or technologically infeasible. Quite simply, there is no way for OSHA to effectively regulate heat illness hazards through a prescriptive standard. Accordingly, we urge OSHA to proceed cautiously in this rulemaking

[1] Throughout our comments, we do not address the SERs by name, as we understand that this is the Panel's approach for purposes of writing its Final SBREFA Report, and out of respect for their privacy.

and give careful and thoughtful consideration, based on the feedback from the regulated community and employees, whether a heat standard is necessary. If OSHA chooses to proceed, it should promulgate a standard that is performance-oriented, flexible, and centered on training.

To that end, we know OSHA mentioned in its SER Background Document for Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings ("SER Background Document") that some of the options in its Regulatory Framework for Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings ("Regulatory Framework") will stay as options that employers can choose from, whereas others might be reduced to a single requirement. *See* OSHA SER Background Document (August 2023) at p. 8 (stating, "While the options for some elements could eventually be reduced to a single requirement in the regulatory text of a potential rule, there could also be instances in which the regulatory text contains multiple options for a particular element from which employers could choose. Some existing state standards have taken this approach of having multiple compliance options for required elements, such as rest breaks (OR, 2022a; OR, 2022b), acclimatization (OR, 2022a; OR, 2022b), and supervision (WA, 2009; WA, 2022). In addition, while some elements might be required for all covered workplaces, others might only be required when the temperature is at or above an initial heat trigger or a high-heat trigger."). We encourage OSHA to keep the options as options, but to also expand upon them, and give employers the ability to tailor their programs according to their own individual sizes, work environments, job tasks, workforces, etc. Otherwise, any rule that is promulgated could be economically burdensome and cost prohibitive.

OSHA should look to the performance-oriented Process Safety Management ("PSM") Standard as a model for heat illness. For PSM, this approach was met with substantial support from the regulated community in large part because it allows employers to consider and address the specific needs of their particularized workplaces in establishing workplace requirements. In the preamble to the final rule, OSHA provides:

> Participants in the rulemaking also supported OSHA's development of a performance-oriented standard. The Chemical Manufacturers Association remarked: ['']Initially CMA would like to commend OSHA on its efforts to craft a comprehensive performance-based standard addressing process safety management of highly hazardous chemicals. As CMA has commented in past rulemakings, ***performance language capitalizes on industry's ingenuity and capability to effectively reduce hazards as they may be uniquely applied to a particular safety concern.***['] Ashland Petroleum Company stated: ['']Ashland * * * is generally supportive of the efforts of the Secretary and of the Occupational Safety and Health Administration with respect to this proposed regulation. While our internal commentors had divided between a desire for specificity and the obvious value of the non-detailed performance approach, ultimately we believe ***the "performance standard" approach is the best way to regulate a wide variety of situations for which a common end is desired***.['] The American Society of Safety

> Engineers noted: [']The Society commends ***OSHA's use of a performance standard rather than a specification rule, believing this is the better means to help ensure each affected facility address its individual situation***.[']

See 57 FR 6356 (February 24, 1991) (exhibit references omitted) (emphasis added). Likewise, for similar reasons, a heat illness prevention standard would be most effective through a performance-oriented approach.

In fact, even more than with process safety management, heat hazards are deeply dependent on the individual worker. Two employees working in ***identical environments***, may experience vastly different risk of heat illness. A task and environment that poses no risk to a hydrated, healthy employee may pose serious risk to an unhealthy, dehydrated employee. This is the reason regulating heat hazards is so challenging. To be effective and successful, any such standard must allow employers the ability to consider and address the particulars of their individual workplaces and individual workforces.

At the same time, we hear and understand OSHA's dilemma about employers asking for flexible, performance-based standards, and then, after such standards are issued, subsequently asking for guidance to set forth clearer compliance lines (i.e., arguably asking for more prescriptive language). By no means are we suggesting that the words "flexible" and "performance-based" be taken to mean "vague." Employers need clear regulatory language so that they know how to comply. To that end, we believe that many parts of the Regulatory Framework are concerning because they are too vague.

For example, there are various references to "observation of employees for signs and symptoms" or "observed signs and symptoms." *See* OSHA Regulatory Framework at pp. 7-8. Among many of our concerns regarding this language is that it is too vague. There are many signs and symptoms of heat illness. Do they have to be observed for a set amount of time? Is one minute enough? Sweating is a sign/symptom of heat illness. How much sweat must be observed before it rises to the level of warranting attention? Additionally, while we like the open-endedness of allowing outdoor worksites to use "[c]ooling measures (e.g., cooling fans/misting machines), if employer can demonstrate that they are at least as protective as shade[,]" we are not sure how we would go about demonstrating that such measures are at least protective as shade, and to the extent that that would require engineering or legal expertise, small businesses are in no position to readily afford those. *See* OSHA Regulatory Framework at p. 5. In these and similar circumstances, it will be difficult to tell what would be considered sufficient action by an employer, especially if a heat illness were to occur. In retrospect, it may always look like preventive/mitigative actions were insufficient, so clear compliance lines would be useful.

We believe OSHA can strike a balance between the need for a flexible, performance-based standard and the need for clear compliance lines by crafting a standard that is flexible and performance-oriented, with limited, necessary prescriptive language, rather than crafting a standard that is prescriptive, with certain flexible, performance-based options. The key is

ensuring that employers have flexibility in deciding how best to protect their workers, but that they can also rest assured that their methods are compliant. Here, to the extent that any part of a heat standard sets forth specific prescriptive criteria, we urge OSHA to limit this to training requirements. We recommend that the standard should be training-focused, and have robust, comprehensive employee training programs that have proven effective in mitigating heat hazards. The importance of employee heat illness training and education cannot be overstated.[2]

State heat illness standards demonstrate this. Though existing state heat illness standards vary quite substantially, they all impose training requirements. For example, Cal/OSHA's requirement for employee training states that training must be provided on topics such as: the environmental and personal risk factors for heat illness, as well as the added burden of heat load on the body caused by exertion, clothing, and personal protective equipment; the importance of frequent consumption of small quantities of water when the work environment is hot and employees are likely to be sweating more than usual in the performance of their duties; the concept, importance, and methods of acclimatization; the different types of heat illness, the common signs and symptoms of heat illness, and appropriate first aid and/or emergency responses to the different types of heat illness, and in addition, that heat illness may progress quickly from mild symptoms and signs to serious and life threatening illness; and the importance to employees of immediately reporting symptoms or signs of heat illness in themselves, or in co-workers. *See* 8 California Code of Regulations ("CCR") 3395(h). These topics are similar to those required under the Washington and Oregon standards as well.

Training on hazard recognition, as well as prevention and mitigation methods, including water, rest, and shade – for employees and supervisors – is critical to controlling heat hazards. Empowering employees to recognize the signs and symptoms of heat illness for themselves and their co-workers, and stressing the importance of reporting those signs and symptoms to supervisors is crucial. We support development of a heat illness prevention standard that is focused on training, and ask OSHA to consider providing employers with templates for heat illness training as part of a non-mandatory appendix to any standard. A common construction saying is to always choose the right tools for the job instead of using everything in the toolbox. That applies here as well – the right tool is training.

As a final note, we understand that OSHA might be skeptical when employers ask for flexibility or performance-based standards. But, we respectfully ask that OSHA see it the other way around. We want to do what we know works rather than what might seem wise on paper but does not work in the field. SER after SER in all six Panel meetings stated that they have not had a heat-related injury or illness in years, meaning that our existing programs are working. Flexibility will allow for more – not less – effective programs.

[2] Because employee's physiological make-up is such a key component to whether an employee experiences risk associated with heat, employee training should be the centerpiece of any heat standard.

2. The Elements in the Regulatory Framework are Technologically and/or Economically Infeasible (That is, OSHA's Time/Cost Estimates are Too Low).

In reviewing the SER Background Document, overall, OSHA's time/cost estimates are way too low, meaning that they do not accurately represent the technological and/or economic infeasibility of the various elements in the Regulatory Framework. We mention a few examples here; however, our comments extend to each element. For example, the estimates for how long it will take to either modify or create a written Heat Illness and Injury Prevention Program ("HIIPP") are exponentially low. Per the SER Background Document, OSHA estimates that it will take 2.5 hours to modify existing programs, and 6 hours or 40 hours to create a program, depending on whether a model template is used or the program is created from scratch. *See* OSHA SER Background Document at p. 27.

These numbers are way too simplistic and not based in reality. While we have to write the program, we also have to plan out the program, before any writing even begins. The planning process alone can take days, weeks, or even months as we consider input from different stakeholders and numerous factors, including, but not limited to, how this new program will fit in with existing programs, how to implement the various components, how to account for any resources we may need, how our employees will adjust to the new requirements, etc. Then comes the physical drafting of the program, which again, can take days, weeks, or months. Even if we use templates (which typically have numerous placeholders), we want to make sure that our wording is accurate and easy to understand (i.e., not just copied/pasted from the standard), that we tailor certain sections appropriately, that there are no conflicts with our existing programs, that we make appropriate cross references, etc. And then, after we write the program, of course, and perhaps the most importantly, is roll out and implementation. That means we have to get it integrated with our existing policies and procedures, purchase any necessary supplies and distribute them accordingly, communicate the program to our employees and ensure it is effectively understood,[3] modify our existing, or create new, training materials (e.g., videos, slides, quizzes, etc.), make sure our supervisors are educated on the standard and ready to provide training (e.g., through "train-the-trainer" training), make sure we do any follow-up training if our employees do not pick up the material the first time, etc. And that's just the first round. Program development is an iterative process; it is not "one and done."

Although hard to say, in part because it is such an iterative process, we guess that our programs probably took us at least 90 days to create, which does not even account for rolling it out and implementing the measures contained in the program. In looking at the Regulatory Framework, we believe that it would probably take at least 60 days to modify our existing programs. That means that it would cost approximately $25,000 dollars based on current wages. And, although it is very difficult to estimate, we think lost opportunity costs could be upwards of $100,000. For small businesses, this is very economically

[3] One way we do this is by providing quizzes on the program to our employees. If multiple employees do not score above a certain percentage, we go back and make any modifications that might increase comprehension in case the quiz scores could be indicative of a need for improvements to the program.

burdensome and resource constraining. In this regard, we urge OSHA to do everything possible to allow employers to maintain their existing effective programs and avoid these unnecessary costs. This would not be a novel approach either, as OSHA has used similar language in other standards, including its Hazard Communication ("HAZCOM") Standard. *See* 29 CFR 1910.1200(e)(3) ("The employer may rely on an existing hazard communication program to comply with these requirements, provided that it meets the criteria established in [29 CFR 1910.1200(e)].").

By way of another example, as related to the supervision element, OSHA estimates that employers would task a designated person to stay in communication with employees, and that this activity would require, on average, 5 minutes per check-in every 2 hours (20 minutes total per 8-hour shift). *See* OSHA SER Background Document at pp. 36-37. Again, we think that this is an enormous underestimate, and that, indeed, this designated person would not have much time to do anything else. If the check-in is meant to be meaningful (not a "check-the-box" exercise), it will take much longer to prepare for the check-in, communicate with the employee, and document any notes and follow up as necessary. Small businesses are already stretched too thin for resources, and wear too many hats. Piling on additional requirements on supervisors may require some small business to hire new staff, if they can bear the cost. But, consider too that piling additional requirements can be counterproductive, for small and larger employers alike. With too many obligations, other important safety and health responsibilities may slip.

Additionally, many SERs also spoke about how their workforces are spread out over large distances. This was particularly true of a SER who spoke during the September 14, 2023 Panel meeting. The SER stated that he has employees spread out up to 120 miles apart, working on multiple different jobsites per day. It will be exceedingly time-consuming to track down and stay in communication with each employee. Far more than 20 minutes total per 8-hour shift. To avoid this burden, we think a better approach is to ensure that employers effectively communicate to employees the importance of reporting to a supervisor any signs or symptoms of heat illness (after providing training on those signs and symptoms of course). Supervisors can then take appropriate action.

Again, we believe OSHA's estimates of time/cost are way too low overall. However, one last example we mention here is OSHA's estimates related to monitoring weather conditions. OSHA states:

> The standard could require employers to identify if and when heat hazards exist and to monitor the hazard. For outdoor work sites, the standard could require employers to monitor weather conditions to determine when there is a heat hazard. OSHA is considering three options for monitoring weather conditions. The first option would involve a designated person for each work site tracking local forecasts of ambient temperature and humidity provided by the National Weather Service (NWS) (or others) to determine the daily maximum heat index, which the employer would then use to determine which protocols are triggered, if any, to be used

throughout the entire working day. ***OSHA estimates it would take approximately 15 seconds per occurrence to read the daily forecast***.

The second and third options would require employers to measure work area conditions. OSHA could require employers to take measurements at or as close as feasible to the work area on days when relevant forecast heat triggers are met or exceeded. The only difference between options two and three is the type of measurements the employer would need to take. The second option would require the employer to designate someone to take measurements of heat index or ambient temperature and humidity to calculate heat index (if needed, using the OSHA-NIOSH Heat Safety Tool App as a calculator or the online calculator available from the NWS). ***OSHA estimates it would take the designated person 5 minutes each time they measure the heat index or ambient temperature and humidity, including calculating the heat index (e.g., by consulting the OSHA-NIOSH App or NWS's online calculator).*** The third option would require the employer to designate someone to take measurements of wet bulb globe temperature (WBGT). This option would require the purchase of one WBGT thermometer for each worksite. ***Additionally, OSHA estimates the designated person would need 30 minutes to read the WBGT thermometer user manual and 10 minutes per stabilization period and measurement***.

Employers with indoor work sites may be required to conduct a hazard assessment to identify the work areas or processes where there is potential for employees to be exposed to hazardous heat, including a determination of whether and when outdoor heat affects indoor temperature/heat index at the work site. ***OSHA estimates that conducting the hazard assessment would require about 8 hours in total***.
If the employer determines that any employee's exposure may equal or exceed relevant initial heat triggers [], the employer could be required to develop a monitoring program to identify when employees are exposed to heat at or above the relevant triggers (as part of the HIIPP []). OSHA is considering two options for monitoring conditions in indoor worker settings. ***These options are the same as options two and three for outdoor worksites discussed above, except that they are not tied to local weather conditions. OSHA estimates that the hours and equipment necessary to comply would be the same.*** Note that employers could be required to conduct additional monitoring or a new hazard assessment whenever a change in production, process, equipment, or controls has the potential to increase heat exposure.

See OSHA SER Background Document at pp. 28-29 (emphasis added). These numbers again do not reflect reality because they do not account for factors such as the forethought that must go into monitoring weather, the checks for accuracy that many employers conduct, the possibility that resampling may be necessary, or the decisions that must be made once the temperature is determined.

For example, in checking the forecast, we routinely consult multiple different forecasts since each can be different, and we want to determine which one is most representative. This alone can take 20-30 minutes per occurrence. Not to mention, we have to check different locations if we are working multiple jobsites. Additionally, taking measurements will be exceedingly difficult. It seems OSHA may have assumed that each workplace has an industrial hygienist or other knowledgeable safety professional on standby. That is not the case. Employers, particularly small businesses, will have to train their supervisors on how to take measurements, as well as make any necessary calculations. Measuring WBGT in particular will be particularly time-consuming and costly. Again, not only is the specialized equipment expensive, the cost associated with the number of hours required to train on how to use it, and then ensure it is being used correctly, will be cost prohibitive.

We guess that it could take 30 minutes each time to measure the heat index or ambient temperature and humidity, including calculating the heat index, and many hours, as well as a fair degree of professional background in industrial hygiene / safety to read the WBGT thermometer user manual and 45-60 minutes per stabilization period and measurement. And, as to the heat hazard assessment, even though we do not typically have indoor worksites, we think 8 hours is a vast underestimate. A lot of planning, thought, and consideration goes into each Job Hazard Analysis ("JHA") that we write for our jobsites. Based on our experiences, we guess that a hazard assessment could take at least 40 hours. However, that does not even take into account the time that could be required to conduct a new hazard assessment whenever a change in production, process, equipment, or controls has the potential to increase heat exposure, as OSHA is contemplating. *See* OSHA Regulatory Framework at p. 3. That too could be very time-consuming and economically burdensome.

Again, the examples above are not meant to be comprehensive. We believe the costs and/or time associated with every element in the Regulatory Framework have been vastly underestimated, meaning that they do not accurately represent the technological and/or economic infeasibility of the elements in the Regulatory Framework. As mentioned by numerous SERs in all of the Panel meetings, complying with the Regulatory Framework as written could very well be impossible. For example, one SER at the September 12, 2023 Panel meeting stated that compliance under the Regulatory Framework would increase costs by 1.5 to two times, including $50,000 on an annual basis, and upwards of $100,000 for retrofitting equipment, depending on the equipment installed, contractor availability, etc. The SER stated that the economic impact could be "very substantial" for his small business. Another SER at the September 14, 2023 Panel meeting stated that the costs of compliance could get near $96,000 per year. And, with respect to air movement alone, one SER who participated in the September 18, 2023 Panel meeting stated that she spent $200,000 on upgrades and modifications. While some small businesses may be able to afford these costs, others cannot. Accordingly, we urge OSHA to consider these substantial burdens, particularly as related to the major impact that they will have on small businesses, in any rule it develops going forward.

3. The Standard Should Not Cover Indoor Worksites.

Although we tend to work on top of roofs, and so, work outside, we noticed that, as difficult as it may be to regulate outdoor heat, it may be even more difficult or indeed impossible at this point to regulate indoor heat on a national level. As such, we recommend that any initial heat injury and illness prevention standard should focus on and be limited in application to outdoor settings only, segregating regulation of indoor heat for a potential separate rulemaking. A number of sound reasons exist to segregate and tier regulation of heat, focusing first on outdoor environments. First, regulating exposure to heat can require vastly different controls depending on whether the source of the heat is an indoor or outdoor environment. In particular, engineering mechanisms to control indoor and outdoor heat are typically entirely different, and present an entirely disparate set of challenges. OSHA cannot easily regulate both sources of heat with a single regulatory approach.

Second, as set forth in OSHA's SER Background Document, the large majority of very serious heat-related illnesses occur in outdoor environments. The SER Background Document states: "In an evaluation of 66 heat-related illness enforcement investigations from 2011-2016, ***80% of heat-related fatalities occurred in outdoor work environments***." *See* OSHA SER Background Document at p. 4 (emphasis added); *see also* 86 FR at 59310 (emphasis added). Although the SER Background Document goes on to state that "61% of non-fatal heat-related illness cases occurred during or after work in an indoor work environment[,]" this data is difficult to interpret since it combines illnesses that occurred during ***and after*** work in an indoor work environment. Could the illnesses that occurred after work in an indoor work environment have been attributed to ***outdoor*** heat? To be clear, we do not deny that indoor temperatures can reach hazardous levels. We simply highlight this data because it demonstrates the concentration of risk for very serious heat-related illnesses in outdoor environments. Thus, for purposes of this rulemaking, outdoor heat should be OSHA's primary focus.

Additionally, the standard should be limited in scope to outdoor work environments only because there are several major challenges associated with attempting to regulate indoor heat. For example, the measurement to determine "hazardous heat" is inconsistent and difficult to apply in indoor settings. While employers in the same geographic area can reasonably rely on ***weather forecasts*** to determine outdoor temperature, employers would inevitably be required to take their own measurements on some periodic basis to determine whether heat has reached hazardous levels in their unique indoor workplaces. Indeed, this is reflected in OSHA's Regulatory Framework. Per the Regulatory Framework, in describing indoor worksites, OSHA states:

> The standard could require employers to conduct a hazard assessment to identify the work areas or processes where there is the potential for employees to be exposed to heat hazards, including a determination of whether and when outdoor heat affects indoor temperature/heat index at the work site. When information

gathered during the hazard assessment indicates that any employee's exposure may equal or exceed the initial heat trigger [], the employer could be ***required to develop a monitoring program*** to identify when employees are exposed to heat at or above the relevant triggers. Employers could be required to conduct additional monitoring or a new hazard assessment whenever a change in production, process, equipment, or controls has the potential to increase heat exposure.

Monitoring options could include:

- Option: Employers measure heat index or ambient temperature and humidity to calculate heat index (employers could use the OSHA-NIOSH Heat Safety Tool App as a calculator or the online calculator available from the National Weather Service) at or as close as feasible to the work area
    - Optional to account for dry work sites: If the indoor relative humidity is below a certain threshold (e.g., 30%), the employer could rely on ambient temperature alone.
    - Optional for employees in vapor-impermeable PPE: Employers could rely on ambient temperature triggers when employees are wearing vapor-impermeable protection.
- Option: Employers measure wet bulb globe temperature at or as close as feasible to the work area

See OSHA Regulatory Framework at p. 3 (emphasis added). Notably, because temperatures would not be accurate otherwise, the option for tracking local forecasts that is included for outdoor worksites is not presented as an option for indoor worksites. *See* OSHA Regulatory Framework at pp. 2-3. We agree that outdoor temperatures likely should not dictate actions for indoor operations as there are a number of factors that come into play in determining indoor temperatures that are not relevant to outdoor temperatures (e.g., climate control, placement of windows, energy grid, etc.). Accordingly, employers with indoor worksites would be required to do active, periodic temperature measuring, for which many employers, particularly small businesses, simply do not have the resources.

Specifically, under the Regulatory Framework, covered employers with indoor worksites are presented with two options for monitoring. First, they can measure the heat index, either by purchasing some equipment, or by calculating it based on measurements of ambient temperature and humidity. However, as nearly all SERs expressed during the Panel meetings, small employers already wear too many hats and are stretched extremely thin for resources. Indeed, many of us do not have the resources to have designated safety professionals. Adding a requirement that someone go out and measure the heat index, or calculate it after taking ambient and/or relative humidity readings, even if an online or app-based calculator is available, on some frequent basis throughout the day, in likely

numerous areas of the worksite (indeed, potentially multiple worksites), is simply not feasible. As one SER remarked during the September 12, 2023 Panel meeting, the indoor monitoring options will likely require the company for which she works to hire a new full-time employee, or convert a current part-time employee into full-time status, which, especially for small employers, can be economically burdensome.

Moreover, these indoor heat index readings may not be accurate. Indeed, one SER asked OSHA during the September 12, 2023 Panel meeting whether OSHA has developed an OSHA-NIOSH Heat Safety Tool App for indoor worksites, since the current OSHA-NIOSH Heat Safety Tool App is designed for outdoors work environments. *See* National Institute for Occupational Safety and Health "OSHA-NIOSH Heat Safety Tool App" (last reviewed August 2, 2022) (stating, "The simplicity of the HI [heat index] makes it a good option for many ***outdoor*** work environments (if no additional radiant heat sources are present, such as, fires or hot machinery).") (emphasis added). OSHA stated no, but that that idea is under discussion right now, and admitted that, while the current OSHA-NIOSH Heat Safety Tool App can be helpful for purposes of determining indoor heat if outdoor heat is affecting indoor temperatures, actual measurements are still necessary. Additionally, as one of the SERs from the September 19, 2023 Panel meeting demonstrated with his own trial monitoring, indoor heat index measurements can result in readings that are much different from equivalent WBGT readings.

To that end, as a second option under the Regulatory Framework, employers with indoor worksites can measure WBGT. However, even OSHA recognizes in its SER Background Document that measuring WBGT may be more challenging for some small employers, and states that it is not currently considering proposing this as the only option. *See* OSHA SER Background Document at p. 13 ("OSHA recognizes that WBGT measurements may be more challenging for some small employers, and thus is considering heat trigger options using simpler heat index or ambient temperature measurements consistent with most state heat-specific standards []. As such, OSHA does not currently envision a standard that would require WBGT measurements without providing employers with one or more options for simpler heat index or ambient temperature measurements."). We agree, and want to specifically point out that the specialized equipment used to measure WBGT (let alone the costs associated with taking the time to learn how to properly use such equipment) can be extremely economically burdensome. Clearly, challenges still remain with respect to the ability to measure indoor "hazardous heat" levels in a manner that reflects the well-being of an employee in an efficient and effective way.

There are also significant concerns with respect to defining "indoor" work, as reflected in part in OSHA's "Heat Injury & Illness Prevention in Outdoor and Indoor Work Settings: Small Business Advocacy Review (SBAR) Questions" ("Heat SBAR Questions") document. *See* OSHA Heat SBAR Questions at p. 1. For example, OSHA asks:

- What types of occupations at your workplace do you consider outdoor occupations, and what percentage of your workforce falls into that category? What types of

occupations at your workplace do you consider indoor occupations and what percentage of your workforce falls into that category?

- Consider employees at your workplace who work both indoors and outdoors; on average, how much time do they spend outdoors? How much time indoors? How much time indoors is next to process heat or heat-generating equipment?

- Are there certain work settings in which you are unsure if they would be considered outdoor work settings or indoor work settings? If so, what are they? What characteristics of that work setting make it hard to classify as solely indoor or outdoor?

See OSHA Heat SBAR Questions at p. 1. So, there is recognition by OSHA that, in any industry, employees may spend time both indoors and outdoors as part of their job, and that there are certain work settings that simply do not fit neatly in one category or the other. On the latter point, as one SER mentioned during the September 7, 2023 Panel meeting, this can be especially difficult in the construction industry, where structures are built from the ground up. Buildings begin very bare, and, as more infrastructure is added, become more substantial, so there is a natural transition from being considered more outdoors than indoors, to more indoors than outdoors. But, that transition is unclear at best. If OSHA were to regulate both indoor and outdoor heat through this rulemaking, it would have to provide a very clear, bright line on how to make the distinction so employers can know under which part of the standard they fall at any given moment.

Yet, this is still a topic of much debate in the few jurisdictions attempting to regulate both indoor and outdoor heat. For example, comments submitted on proposed text of draft revisions dated January 29, 2019, for Cal/OSHA's Heat Illness Prevention in Indoor Places of Employment state:

> Lack of a clear distinction between the two spaces will create confusion and significant challenges regarding compliance and safety.
>
> There are numerous structures that have open doors and moveable walls allowing employees to walk in and out of the facilities throughout the day. When employees are outside the structure, they potentially fall under the outdoor heat illness regulations, even if they are outside for a limited time, even though most of their work is spent "indoor." For example, many construction employees perform interior work while frequently going outside to prepare or obtain materials, then going back inside.
>
> Thus, the definition of "indoor" could make it unnecessarily burdensome for employers to determine whether an area is indoor or outdoor and to manage accordingly and correctly. Therefore, employers need clarity and the ability to harmonize the indoor requirements as much as possible with the outdoor requirements so they may maintain and manage one plan.

See Coalition and Chamber of Commerce Comments on Cal/OSHA's Heat Illness Prevention in Indoor Places of Employment Standard (dated February 22, 2019). We agree with these concerns.

In this regard, there simply is not yet enough understanding of the way to establish one standard for indoor and outdoor heat. This is evidenced by state efforts to regulate heat.[4] Of the four states that have heat illness prevention standards – California, Oregon, Washington, and Minnesota – three states apply those standards to outdoor settings only (California, Oregon, and Washington); only two apply them to indoor settings (Oregon and Minnesota), and only one applies its standard to both (Oregon). And although Minnesota's standard includes a definition for "indoor,"[5] that definition could not be adopted or relied on in a federal standard because the Minnesota standard does not regulate outdoor heat. In fact, the only state that currently regulates both indoor and outdoor heat – Oregon – does not provide a definition for "indoor" at all. Furthermore, because Oregon's standard took effect June 15, 2022, it is still too new to assess its effectiveness and reasonableness.

Accordingly, for the above reasons, we urge OSHA to exclude indoor heat from this rulemaking. To the extent that OSHA wishes to expand the application of its rule to indoor settings, it should, like California, do so in a subsequent rulemaking, when more information is available on how to effectively and reasonably regulate indoor heat, and the regulation can focus on the unique aspects of indoor heat sources, how best to establish measurement thresholds, the control mechanisms to manage indoor heat, and the feasibility of these controls. Of course, for purposes of efficiency, any future standard regulating indoor heat should be designed to align with and allow employers to rely on programs established to comply with an outdoor heat standard.

4. The Standard Should Not Apply to Emergency Operations As Interpreted in the Broadest Sense or to Drivers With Air-Conditioned or Fan-Ventilated Vehicles.

To the extent that OSHA promulgates a standard for the prevention of heat illness, the agency should scope the standard properly and narrowly to cover those employees most at risk. In hearing from our fellow SERs, we believe for example that the standard should not apply to the broadest range of emergency operations, or to drivers with air-conditioned or fan-ventilated vehicles. The Regulatory Framework states:

> OSHA could consider exempting:
>
> - Short duration exposures, such as 15 minutes of work in hazardous heat

[4] We understand that OSHA includes Colorado in its analysis of states with state heat illness prevention standards its SER Background Document. However, Colorado's standard only applies to agricultural work sites, so it is not a good comparison for purposes of this rulemaking, where OSHA is attempting to issue a broad general industry rule.
[5] Per Minnesota OSHA's standard, "indoor" means "any space between a floor and a ceiling that is bound on all sides by walls. A wall includes any door, window, retractable divider, garage door, or other physical barrier that is temporary or permanent, whether open or closed." *See* Minnesota Administrative Rules 5205.0110 Subpart 5(A).

conditions every 60 minutes

- Emergency operations such as those already covered under 29 CFR 1910.156 or 29 CFR 1910.120 (Note: OSHA is currently engaged in rulemaking on emergency response and there are elements of on scene rehabilitation that address the same issues covered in this standard.)

- Work in spaces where mechanical ventilation keeps working areas below certain conditions (e.g., ambient temperature of 80°F) with possible administrative controls required if the mechanical ventilation is not operable

- Work done from home (e.g., telework, remote, and hybrid employees)

- Sedentary or light activities performed indoors, if these are the only activities performed during the work shift

See OSHA Regulatory Framework at p. 1. As a preliminary matter, we would like to note that the mechanical ventilation "exemption" is not so much an exemption as it is a method of compliance. Air conditioning and fan ventilation are effective engineering controls. As the agency is aware, where elimination and substitution are not available, engineering controls are at the top of the hierarchy of controls, and are generally considered the most effective method for mitigating hazards. Essentially, air conditioning and fan ventilation are methods of controlling climate so that hazardous heat levels are not reached in the first instance. Additionally, we believe that there is little if any hazard associated with short term exposures, or sedentary or light activities performed indoors, and that it would be impossible for employers to effectively enforce their heat programs on employees working from home. Accordingly, we agree that these exemptions should stay as exemptions, but note that they should also be broadened.

For example, we think that the emergency operations exemption should be expanded to the maximum extent possible. Currently, the Regulatory Framework appears to tie the exemption to 29 CFR 1910.156 and 29 CFR 1910.120. That should not be the case. We heard from multiple SERs who might not be covered under one of those standards, but must provide support in warmer temperatures to save lives and/or critical infrastructure. For example, one SER who participated in the September 14, 2023 Panel meeting stated that he has conducted emergency work to restore the power grid, which has significant consequences for critical infrastructure like hospitals. Utilities must get power lines back up and running, and, similar to Oregon OSHA's heat illness prevention standard, that activity, among other emergency operations, should be expressly included within the scope of this exemption.[6] *See* Oregon Administrative Rules ("OAR") 437-002-0156(1)(a)(C)

[6] As set forth in the Regulatory Framework, we understand that OSHA is currently engaged in rulemaking related to emergency response and that there are elements of on scene rehabilitation that address the same issues covered in this standard. Nonetheless, we urge OSHA to include this broadened exemption in any heat illness prevention

(exempting "[a]ll emergency operations that are directly involved in the protection of life or property, or the restoration of essential services, such as evacuation, rescue, medical, structural firefighting, law enforcement, utilities, and communications, when employees are engaged in those operations.").

Additionally, while this may partially fit within the mechanical ventilation "exemption," it should be made clear that any heat illness prevention standard should not apply to drivers in air-conditioned or fan-ventilated vehicles, and that this should include related work drivers may conduct outside the vehicle, such as pickup and delivery, so long as there is unimpeded access to the air-conditioned cab at all times. This is in part because it would be nearly impossible for employers to enforce a heat standard to vehicular work settings. Drivers typically work alone. Thus, while employers can certainly train and educate on the importance of turning on air-conditioning in vehicles when temperatures are high, and we advocate for such an approach, it is impossible for the employer to know whether the driver maintained air-conditioning at cool enough levels throughout the trip. Additionally, drivers move to areas of different temperature as they drive from area to area; however, temperature can remain relatively stable with air-conditioning or fan ventilation. It would be impossible for employers to determine each area where the heat standard might be triggered since weather varies with time and drivers' expected times of arrival may vary based on unexpected traffic.

We also think that fans should be recognized as an effective substitute for air conditioning, particularly in or around vehicles such as tractors and forklifts, and where fan ventilation reduces heat below thresholds of concern. Recognizing fans as a substitute for air conditioning makes sense not only from a risk standpoint – air flow is an effective mechanism to cool body temperature – but is an important consideration that should be made in light of climate change concerns regarding the burden on the climate from air conditioning use. There are also significant economic costs associated with trying to retrofit vehicles to install air conditioning. One SER who spoke at the September 12, 2023 Panel meeting stated that it would cost $1,500-3,000 per vehicle to add air conditioning. Accordingly, we believe that the standard should not apply to the broadest range of emergency operations, or to drivers with air-conditioned or fan-ventilated vehicles.

standard at least in part to ensure consistency, and in light of the fact that, assuming both standards are promulgated (which may not even be the case), it will be difficult to determine which is promulgated first.

SPECIFIC COMMENTS

1. ***OSHA Should Add Flexibility to Any HIIPP Requirement, Recognize That HIIPPs are Mitigation Programs, and Eliminate Any Vague Requirement That Programs be Reviewed to Ensure Ongoing Effectiveness.***

Although we generally support the written HIIPP element in the Regulatory Framework, we do believe some changes are necessary. For example, we think OSHA should build in more flexibility to allow employers to reasonably rely on their existing effective programs for purposes of compliance. Here, again, the Regulatory Framework becomes too prescriptive in dictating exactly how employers' programs should be written, which is completely unnecessary, and, as set forth above, can be extremely time consuming and cost prohibitive. Per the Regulatory Framework, OSHA states:

> The standard could require that employers create a written Heat Injury and Illness Prevention Program (HIIPP), with the input of employees, and include the following elements:
>
> - Procedures to identify when heat hazards exist for employees, including procedures for environmental monitoring and the identification of work processes and external factors that increase the likelihood of heat-related injury and illness
> - Procedures for implementing engineering controls
> - Procedures for implementing administrative controls, including the provisions of drinking water, rest breaks in a cool and/or shaded area, acclimatization protocols for new and returning employees, and supervision of employees for signs and symptoms of heat-related illness
> - High-heat procedures
> - Procedures for when employees are exhibiting symptoms of heat-related illness and emergency response procedures
> - Training of employees and supervisors
> - Selection of a designated individual(s) to oversee and implement the HIIPP, including environmental monitoring

See OSHA Regulatory Framework at pp. 1-2. More flexibility will allow for more effective programs. Rather than try to require all employers to adopt the same program that may not work for them ***or their employees***, OSHA should acknowledge that programs come in all shapes and sizes, and give credit to those employers who have already developed

effective programs, demonstrated at least in part by the fact that, as stated by SER after SER during all six Panel meetings, that they have not had any heat related injuries or illness over the last several years. Requiring all these specific topics in a HIIPP seems more of an attempt to be able to cite employers for recordkeeping-type "gotcha" citations. ***Training*** on this information, not necessarily having it all in a written program, is key.

Additionally, we also disagree with the name, "Heat Injury and Illness Prevention Program." While yes, certainly, we want, and will do everything we can, to prevent heat injuries and illnesses, the harsh reality is that there are certain circumstances where that is not possible. Heat hazards, unlike many other potential hazards, are out of our control. We cannot eliminate them, nor can we substitute them. We can only mitigate them through engineering and administrative controls, and PPE. Accordingly, we request that OSHA delete the reference to "Heat Injury and Illness Prevention Program" in any heat standard, and allow employers to decide the name of their programs, or alternatively, call it a "Heat Injury and Illness ***Mitigation*** Program."

This is not just a matter of semantics. The name of a safety and health program, perhaps even more so than its contents, has a long-lasting effect on people's perceptions of a hazard and the ways it can be eliminated and/or reduced. That includes the perceptions of our employees. We want to make sure that we are being accurate in the way that we characterize our programs at least in part because we do not want our employees to erroneously "get too comfortable." Other OSHA standards include program names that more accurately describe their purpose. For example, OSHA requires employers covered under its Respiratory Protection Standard to have Respiratory Protection Programs – not Respiratory Hazard Prevention Programs. *See* 29 CFR 1910.134(c). Here too, it would be misleading to call our programs "Heat Injury and Illness Prevention Programs" when they are instead more accurately mitigation programs.

Furthermore, we think OSHA should eliminate any vague requirement that we review our programs to "ensure its ongoing effectiveness." OSHA states:

> The standard could require employers to make the HIIPP available at the work site to employees and governmental representatives and to review and update the HIIPP periodically. Options for frequency for reviewing and updating the HIIPP include:
>
> - Option: Whenever necessary to ensure its ongoing effectiveness
> - Option: Whenever a heat-related illness or injury occurs
> - Option: Annually
> - Option: Whenever a heat-related illness or injury occurs, but no less than annually

See OSHA Regulatory Framework at p. 2. This was echoed by at least one other SER who participated in the September 14, 2023 Panel meeting. Again, this language is far too vague to provide any sort of clear compliance lines. Try as hard as we might, accidents (as opposed to incidents),[7] do happen. But, that does not necessarily mean that our programs were deficient. It would be an unfair use of hindsight for OSHA to cite an employer for not reviewing its program "whenever necessary to ensure its ongoing effectiveness" after an accident.

Additionally, we want to note that the two periodic review options which mention the occurrence of heat related injuries or illnesses are also difficult to implement for compliance purposes. Heat related injuries and illnesses can be some of the most difficult to determine in part because of the myriad of personal health conditions that may involve signs and symptoms similar to those of heat related illnesses. Also, as one SER stated during the September 14, 2023 Panel meeting, what type of result would constitute a heat related injury or illness to prompt program review? Would that be for an employee who gets an IV? Or an employee who goes home early? An employee who sits down and rests? Again, there would need to be clear compliance lines.

As a final thought for purposes of these comments, we question whether our programs need to be subject to periodic review at all. While an annual review period would likely be the easiest option to implement from an administrative standpoint, reviewing our programs every year will still take substantial amounts of time that we already do not have. Again, we wear many hats, and do not have adequate resources for this. Additionally, we do not expect that there will be substantial changes in heat hazards from year to year. As demonstrated by almost all, if not all, SERs, we have been implementing many of the mitigation measures referenced in the Regulatory Framework (albeit, in a variety of different ways) for ages. While we can understand that the agency may be concerned with climate change, those effects are felt over decades and centuries, not annually. Accordingly, we think an approach similar to that incorporated in OSHA's Respiratory Protection Standard, whereby programs must be reviewed only where there are material changes in workplace conditions affecting our heat mitigation methods, makes sense for purposes of a standard. *See* 29 CFR 1910.134(c)(1) ("The program shall be updated as necessary to reflect those changes in workplace conditions that affect respirator use.").

2. The Standard's Metric for Determining Heat Exposure Should be Ambient Temperature or Heat Index, Not Wet Bulb Globe Temperature.

The standard's metric for determining heat exposure should be ambient temperature or heat index, not WBGT. As set forth in the ANPRM, there are many advantages and disadvantages associated with each heat exposure metric. For example, while ambient temperature is calculated using a common thermometer, and is the most accessible and

[7] We generally refer to incidents as those events that are caused by deficient safety and health management programs (i.e., more likely to be preventable), and accidents as all other types of events (i.e., more likely to be unpreventable).

understandable metric, it does not take into consideration humidity, which influences the body's ability to cool. With respect to heat index, while it combines air temperature and humidity, and is a widely reported weather statistic with which many people are familiar, it does not take into consideration radiant heat or wind speed. Last, although WBGT takes into consideration air temperature, wind, radiant heat, and humidity, measuring WBGT requires specialized thermometers or equipment. Additionally, WBGT is not always available as a forecast through the National Weather Service, requiring guidance and training to avoid confusion with more well-known scales like temperature or heat index. Because the disadvantages associated with WBGT far outweigh the advantages, we urge OSHA to use ambient temperature or heat index as the standard's metric for determining heat exposure, and to not develop a standard that would require WBGT measurements without providing employers with one or more options for simpler heat index or ambient temperature measurements, which aligns with OSHA's current vision as set forth in the SER Background Document. *See* OSHA SER Background Document at p. 13.

Although OSHA states that it does not currently envision a standard that would require WBGT measurements without providing employers with one or more options for simpler heat index or ambient temperature measurements, we think it bears emphasizing our rationale for this recommendation. First, as stated above, unlike ambient temperature and heat index, WBGT is not readily available as a forecast through the National Weather Service, and thus, would require employers to monitor and take measurements (or engage in a somewhat complex mathematical calculation). Taking measurements raises numerous questions, including, fundamentally, on what days would employers be expected to take measurements (i.e., how should employers reasonably be expected to know when to measure) and where would employers be expected to take measurements in and/or around the facility?

We understand that, per the Regulatory Framework, WBGT measurements would be required to be taken "at or as close as feasible to the work area (i.e., area where one or more employees are working within the work site)." *See* OSHA Regulatory Framework at p. 3. However, there are numerous complications associated with such a requirement. Indeed, as one of the SERs from the September 19, 2023 Panel meeting demonstrated with his own trial monitoring, WBGT readings taken on one side of an employee can result in numbers very different from WBGT readings taken on another side of the employee. Facilities come in all shapes and sizes; a one-size-fits-all approach cannot work.

Consider also, for example, mobile / trailer type environments where workers will rotate in and out of new trailers. The use of monitoring equipment becomes impractical in such environments. Would one reading suffice, or should there be an average? What time of day should measurements be taken – morning, noon, and/or night? Although some of these questions are raised in the OSHA Technical Manual ("OTM"), Section III: Chapter 4 "Heat Stress," the OTM guidance is dizzying and incredibly complex. *See* OSHA Technical Manual ("OTM"), Section III: Chapter 4 "Heat Stress" (updated September 15, 2017) ("Step 1, Option A: Using a WBGT Meter" and "Step 1, Option B: Calculating WBGT Using Weather

Data").

Although OSHA provides that, if a WBGT meter or records are not available, Argonne National Laboratory ("ANL") has developed a utility (i.e., calculator) that uses literature-supported algorithmic equations to determine WBGT from current or historic data available on the internet, this assumes that all employers have access to this calculator. However, as recognized by OSHA, the calculator must be downloaded and is copyrighted, requiring users to follow open-source license redistribution contingencies.

The calculator also uses a significant amount of information – air temperature, solar irradiance, wind speed, relative humidity, date and time, barometric pressure, and longitude/latitude – to determine WBGT, which may or may not be readily available. And there are limitations associated with the calculator. OSHA states that "[a] calculated WBGT is more accurate when the data source (e.g., weather station) has similar direct sun, humidity, and wind speed as the worksite. If time, date, longitude, latitude, or barometric pressure is not accurate, then the WBGT calculation adjustments will not be accurate." *See* OSHA Technical Manual ("OTM"), Section III: Chapter 4 "Heat Stress" (updated September 15, 2017). Accordingly, while the main advantage of using WBGT is that it accounts for air temperature, wind, radiant heat, and humidity, this matters little if it cannot be measured (whether through metering or calculations) accurately.

The specialized nature of the equipment required to determine WBGT, and associated guidance and training necessary to educate on measuring WBGT, is also concerning. From an economic perspective, use of WBGT is likely not sensible or supportable: "The WBGT requires specialized measurements for the wet bulb and globe temperatures and thus is not typically assessed at weather stations, such as those monitored by the National Weather Service. Many WBGT devices are commercially available, yet no recent studies have been completed to determine the reliability of these devices compared with a specification unit. The devices vary in design and price, ***ranging from approximately $100 to $3000*** (Table 1). Most commercially available WBGT devices directly measure the dry and globe temperatures, but how the wet bulb temperature is determined differs." *See* Cooper, Earl, et al., "An Evaluation of Portable Wet Bulb Globe Temperature Monitor Accuracy," Journal of Athletic Training (December 2017) (emphasis added). This is particularly true for small businesses. And these price estimates do not even take into account the cost of maintaining and/or replacing equipment.

In addition to the economic burden imposed by the equipment itself, the financial and human resource costs associated with training managers and supervisors on how to properly use the equipment are substantial as well. Indeed, we believe that that supplying and effectively training staff (if available in the first place) to use the equipment can be extremely challenging. In our experience, the greater the sophistication (or complication) of the measurement equation/rating, the greater the need for training. We are particularly concerned about how this will impact smaller businesses.

Beyond this, use of WBGT is highly subject to human error. It inevitably will result in incorrect and inaccurate determinations, which in many cases impedes an employer from sufficiently protecting its employees from heat stress and inadvertently establish a false sense of security for employees. In a lot of ways, requiring use of a WBGT essentially imposes a requirement on employers to become full-time weather specialists. This is simply not practical and is overly burdensome, for small and larger employers alike. Also, as weather conditions can change rapidly, if equipment is not immediately available, employers' ability to respond or act can be difficult.

Only one state uses WBGT as its threshold triggering heat illness protection requirements – Minnesota, which has developed an indoor-only rule. Other states use ambient temperature or heat index. Similarly, we, as well as our fellow SERs, use a wide range of metrics for purposes of our own heat programs, but typically use ambient temperature or heat index as our metrics to determine heat exposure. Additionally, we are aware that some employers use standard effective temperature ("SET"), which is defined as "the temperature of an imaginary environment at 50% RH [relative humidity], <0.1 m/s air speed, and t_r [mean radiant temperature] = t_a [air temperature], in which the total heat loss from the skin of an imaginary occupant with an activity level of 1.0 met and a clothing level of 0.6 cloth is the same as that from a person in the actual environment, with actual clothing and activity level," to monitor and assess hazardous heat exposure in the workplace, as well as to monitor the effectiveness of controls. *See* ANSI/ASHRAE Standard 55-2010. However, we agree that SET, like WBGT, might be too complex of a metric for purposes of a national heat illness prevention standard. All of this is to say that, while from a purely theoretical standpoint, there may be no clear "right answer" when choosing a heat exposure metric, the disadvantages of using WBGT in a sweepingly broad standard applicable to all employers – big and small, sophisticated and not – clearly outweigh the advantages.

Accordingly, we urge OSHA to use ambient temperature or heat index as the standard's metric for determining heat exposure, not WBGT, or, at the least, as OSHA mentions in its SER Background Document, not develop a standard that would require WBGT measurements without providing employers with one or more options for simpler heat index or ambient temperature measurements. *See* OSHA SER Background Document at p. 13. Use of a more objective, readily available metric, such as ambient temperature or heat index, is a much better overall approach.

3. The Standard's Temperature Threshold Should be Simple, Science-Based, and Account for Local Environmental Conditions.

Along with our fellow SERs, we too find the hazard identification and assessment section of the Regulatory Framework, which explains the methods for determining at what temperatures certain mitigation measures must be implemented, to be extremely concerning. In short, the standard's temperature threshold should be simple, science-based, and account for local environmental conditions. We realize that SER after SER,

including ourselves, shared information about local weather conditions and our experiences in those conditions. More than many other hazards, the hazard of heat is very dependent on the environment. What works and is necessary in the arid southwest is different than what works in the high humidity Gulf Coast region is different than what works and is necessary in our home states of Colorado and Illinois. What this means is that a federal standard must provide employers the ability to establish programs based on their particularized environments. This comes back to our message that there simply is no "one size fits all" approach to regulating heat.

To start, SER after SER stated in all six of the Panel meetings that the approach towards temperature thresholds and methods presented in the Regulatory Framework is far too complex and complicated for purposes of implementation. We agree. Under the Regulatory Framework, OSHA presents three options (or really, two options, with the second having two sub-options) for outdoor worksites to monitor weather conditions to determine when there is a heat hazard:

(1) tracking local forecasts of ambient temperature and humidity provided by the National Weather Service (or others) to determine daily maximum heat index, with an option to account for dry climates, where employer can rely on ambient temperature alone; or

(2) measuring work area heat conditions every day or when local forecasted conditions meet or exceed relevant triggers, including by either:

(a) measuring heat index or ambient temperature and humidity to calculate heat index at or as close as feasible to the work area at some periodic interval, with an option to account for dry climates, where employer can rely on ambient temperature alone, as well as an option to account for employees in vapor-impermeable PPE, whereby employers can also rely on ambient temperature triggers, or

(b) measuring WBGT at or as close as feasible to the work area (i.e., area where one or more employees are working within the work site) at some periodic interval.

See OSHA Regulatory Framework at pp. 2-3.

For indoor worksites, OSHA goes on to provide information about potential requirements for employers to conduct hazard assessments and develop monitoring programs, with options for monitoring programs that essentially mimic those in the second option (including sub-options) for outdoor worksites. OSHA states, "The standard could require employers to conduct a hazard assessment to identify the work areas or processes where there is the potential for employees to be exposed to heat hazards, including a determination of whether and when outdoor heat affects indoor temperature/heat index at

the work site. When information gathered during the hazard assessment indicates that any employee's exposure may equal or exceed the initial heat trigger [], the employer could be required to develop a monitoring program to identify when employees are exposed to heat at or above the relevant triggers. Employers could be required to conduct additional monitoring or a new hazard assessment whenever a change in production, process, equipment, or controls has the potential to increase heat exposure." *See* OSHA Regulatory Framework at p. 3.

This all culminates in a table ("Table 1") that combines everything together and includes specific initial and high heat triggers. *See* OSHA Regulatory Framework at p. 4 (also below).

Table 1. Options for initial heat trigger and high-heat trigger

	Initial Heat Trigger			High-Heat Trigger		
	Ambient	Heat Index	WBGT	Ambient	Heat Index	WBGT
When using a forecast	78°F or higher	76°F or higher	N/A	86°F or higher	83°F or higher	N/A
When measuring on-site	82°F or higher	80°F or higher	ACGIH AL or NIOSH RAL	90°F or higher	87°F or higher	ACGIH TLV or NIOSH REL

The values in this table represent the minimum value currently being considered.

We certainly appreciate OSHA's effort to reduce all of this down to a table. However, even the table is confusing. Employers, especially small businesses, need simple regulatory text that they can understand and reasonably rely on so that they can come into and maintain compliance. Indeed, it would take an exorbitant amount of time and resources, that, frankly, we do not have, to figure all this out, let alone implement. And while we understand that OSHA would likely develop compliance guidance upon promulgating a standard, we have found that, where the underlying standard is confusing, in many ways, so too is the guidance. Along with our fellow SERs, we urge OSHA to develop a more simplified approach to the temperature thresholds and methods, should the agency decide to move forward with this rulemaking.

Second, and importantly, the temperature thresholds – or, as called in the Regulatory Framework, the "heat triggers" – are too low and not based on science. We understand that OSHA may have referred to certain State OSH Plan states' adopted or proposed heat triggers in establishing the numbers that the agency included in Table 1. *See* OSHA SER Background Document at p. 14. Indeed, OSHA developed another table ("Table 2") to simplify the adopted or proposed State OSH Plan states' heat triggers. *See* OSHA SER Background Document at p. 15. Specifically, OSHA states:

> The minimum options OSHA is currently considering for initial ambient temperature and heat index triggers are 82°F and 80°F, respectively, for on-site measurements. These are comparable with those in heat-specific standards adopted or proposed by states. As indicated in [Table 2] below, the states use various initial heat triggers, some of which are dependent on the clothing or gear worn by

workers. Some of the options for initial heat triggers OSHA is considering are the same as those used by states (CA, 2005; OR, 2022a; OR, 2022b; CO, 2022; WA, 2023). Although other states use different triggers, they are comparable with the options OSHA is considering. California and Colorado use an ambient temperature trigger of 80°F for outdoor work sites and agricultural sites, respectively, as does the Washington updated standard for workers wearing breathable clothing (CA, 2005; CO, 2022; WA, 2023). California's proposed indoor standard uses an ambient temperature trigger of 82°F, while Nevada's proposed standard for indoor and outdoor work sites uses 90°F (CA, 2023; NV, 2022). The states using heat index for outdoor and indoor work sites vary in their triggers: 80°F in Oregon and 88°F in the Maryland proposal (OR, 2022a; OR, 2022b; MD, 2022).

The minimum options OSHA is currently considering for high-heat ambient and heat index triggers are 90°F and 87°F, respectively, for on-site measurements. These are also comparable with those in adopted or proposed heat-specific state standards. While California and Colorado use an ambient temperature high-heat trigger of 95°F, the Washington updated standard uses 90°F and the Washington ETS and Agriculture standard use 89°F (CA, 2005; CO, 2022; WA, 2023; WA, 2022; WA, 2009). The California indoor proposal uses an ambient temperature or heat index trigger of 87°F to impose additional requirements (CA, 2023). Oregon uses a heat index of 90°F for both outdoor and indoor work sites to trigger additional high-heat requirements (OR, 2022a; OR, 2022b).

Table 2. Heat triggers in state heat standards

	Setting	Initial Heat Trigger	High-Heat Trigger
California	Outdoor	80°F (Ambient)	95°F (Ambient)
Washington ETS, Ag, and General Industry	Outdoor	89°F (Ambient) (all other clothing); 77°F (double-layer woven clothes); 52°F (non-breathable clothes)	89°F (Ambient, Ag + ETS only)
Washington (updated)	Outdoor	80°F (Ambient) (all other clothing); 52°F (non-breathable clothes)	90°F (Ambient)
California (proposal)	Indoor	82°F (Ambient)	87°F (Ambient or Heat Index), except for certain clothing or in high radiant heat (82°F)
Minnesota[1]	Indoor	86°F (WBGT), Light work; 80°F, Moderate work; 77°F, Heavy work	
Oregon Ag and General Industry	Indoor/Outdoor	80°F (Heat Index)	90°F (Heat Index)
Maryland (proposal)	Indoor/Outdoor	88°F (Heat Index) and the presence of external influencing factors	
Nevada (proposal)	Indoor/Outdoor	90°F (Ambient)	
Colorado	Indoor/Outdoor Agriculture only	80°F (Ambient)	95°F (Ambient) or other conditions

[1]-Minnesota uses a 2-hour time-weighted average permissible exposure limit rather than a trigger

Note that there are different provisions required at each trigger by each state.

See OSHA SER Background Document at pp. 14-15. More than anything, what this confirms to us is that there is no "one size fits all" approach to regulating heat. Even states as close as California, Oregon, and Washington have vastly different ways of addressing this hazard. But, to the extent that OSHA relied on these State OSH Plan state standards, we do not think that it necessarily shows (the numbers selected in Table 1 are too low), or, perhaps more importantly, that OSHA should have relied on such standards in the first place. This is at least in part because there is no scientific reason for doing so. The states with adopted standards are all on the West Coast (except for Minnesota, which has an indoor-only rule). Clearly, the rest of the country does not have the same climate or weather patterns as the West Coast. Also, as we stated earlier, Colorado has an agriculture-only rule, making it inappropriate to compare against for purposes of developing a general industry rule. And, Maryland and Nevada only have proposed rules, so their heat triggers may change greatly before their standards are issued, if issued at all.

What's perhaps even more puzzling though is that OSHA has completely diverted away from the heat triggers provided in its OSHA-NIOSH Heat Safety Tool App. Per OSHA's Heat National Emphasis Program ("NEP"), "The OSHA-NIOSH Heat Safety Tool App is a resource for finding the forecasted and current heat index [("HI)]. The App indicates the hazard levels using the heat index as: ***Caution less than 80°F HI, Warning 80°F to 94°F HI and [D]anger at 95°F HI or higher***." *See* OSHA "National Emphasis Program – Outdoor and Indoor Heat-Related Hazards" (April 8, 2022) at p. 5 (emphasis added). While we can see

that, per Table 1, the initial heat trigger when measuring onsite is 80°F heat index, which corresponds to the OSHA-NIOSH Heat Safety Tool App's "Warning" level, the other numbers do not follow. For example, the high heat trigger when measuring onsite is 87°F heat index, whereas the OSHA-NIOSH Heat Safety Tool App's corresponding "Danger" level is set at 95°F heat index. Again, we are puzzled by this, especially since OSHA has strongly encouraged employers, for years and years, to use its OSHA-NIOSH Heat Safety Tool App, including through its Heat Illness Prevention campaign materials. The numbers in Table 1 are too low.

To be clear, we are not advocating that OSHA adopt the triggers set by the OSHA-NIOSH Heat Safety Tool App for purposes of a national heat standard. Quite the contrary. We believe flexibility and consideration of local environmental conditions is key. However, we noticed that many SERs, including numerous SERs who participated in the September 7, 12, and 18 Panel meetings, mentioned that they currently use the OSHA-NIOSH Heat Safety Tool App, and think, in alignment with our position that employers' existing effective programs should be able to stay intact, that OSHA should ensure that these employers' reliance on the OSHA-NIOSH Heat Safety Tool App is deemed compliant under any heat illness prevention standard that the agency issues.

Circling back to a scientific approach to any heat triggers, one key consideration is that the triggers be based on local environmental conditions. As OSHA is aware, one of the greatest complications associated with issuing a nationwide heat illness prevention standard is geography. Weather varies considerably from coast to coast. And although creating a bright line heat trigger may seem objective and fair, doing so does not take into account the long-term acclimatization of workers. That is, by way of example, while workers in Florida may be accustomed to working in warmer temperatures for the majority of the year, workers performing the exact same work in Minnesota may not. Accordingly, consideration of local environmental conditions in the standard's temperature threshold is important.

To be clear, we do not deny that heat illness hazards can occur anywhere in the country. As set forth in the ANPRM, although Texas and California accounted for a quarter of all heat-related workplace fatalities from 2000-2010, when the size of the worker populations are taken into account, states like Mississippi, Arkansas, Nevada, West Virginia, and South Carolina, have been found to have the highest rates of heat-related workplace fatalities from 2000–2010. Additionally, as OSHA provides in the ANPRM, climate change is increasing the frequency and intensity of extreme heat events. Indeed, many states experienced record-breaking high temperatures this summer. However, to make this a fair and workable standard, we urge OSHA build into the standard triggers that make sense for the particular area and are higher and hotter than what the average citizen (and the workers covered by the standard) are typically exposed to on any particular day.

Although there is much more to be said on the topic, we conclude with three final remarks. First, in any standard the agency decides to promulgate, taking measurements cannot be

the only option. We understand that that eliminates all of the options for indoor worksites under the Regulatory Framework. However, again, we do not think that any standard should cover indoor work environments at this point. Maybe when OSHA and NIOSH complete development of an indoor OSHA-NIOSH Heat Safety Tool App, or when methods of determining indoor temperatures otherwise become easier, OSHA can pick up a second rulemaking, if it so wishes. However, for purposes of outdoor work environments, the option to track local forecasts is essential, particularly for small businesses that do not have the resources or industrial hygiene expertise to conduct periodic measuring, and for small and larger employers that work on multiple jobsites per day. Measuring temperature cannot be the only option; there must be allowance for tracking local forecasts or otherwise determining whether any heat triggers have been met.

Second, as roofing contractors, we think it is important for OSHA to keep in mind that, if the heat triggers are too low, we might be called more and more often to start earlier and earlier on in the day. While those earlier start times might be cooler, they can also be darker and more damp, meaning that our employees will be exposed to greater slip/trip/fall hazards. We work from heights, near the edges of buildings, on all kinds of roofs, including sloped roofs, and climb up and down ladders. Lighting and dry conditions are absolutely essential. And while some larger general contractors can afford extra lighting around the buildings we work on, others simply cannot.

And lastly, we recognize that OSHA is considering a definition for "heat wave," which would trigger a couple additional requirements (namely, additional acclimatization and supervision requirements). *See* OSHA Regulatory Framework at pp. 4 and 7. In particular, OSHA is considering the following two options:

- When the National Weather Service issues a heat advisory or a heat warning for the local area

- When the daily maximum temperature exceeds 90°F and is 9°F or more above the maximum reached on the preceding days

See OSHA Regulatory Framework at p. 4. We think inclusion of a "heat wave" definition would only serve to make the standard more complicated and confusing and should be eliminated from any proposed rule. (Not to mention, trying to understand the second option for a definition alone is exceedingly difficult.) There are already three levels of compliance contemplated by the Regulatory Framework – (1) requirements that must be implemented at all times; (2) those that must be implemented at an initial trigger level; and (3) those that must be implemented at a high heat trigger level. *See* OSHA SER Background Document at p. 7 ("Figure 1" excerpt below).

Figure 1. Potential elements and when they might be required

Potential Elements	All Covered Workplaces (see Scope)	At or Above Initial Heat Trigger	At or Above High-Heat Trigger
Hazard identification and monitoring (based on forecast or workplace measurements)	●	●	●
Drinking water	●	●	●
Emergency response procedures	●	●	●
Training for employees and supervisors	●	●	●
Heat injury and illness prevention plan	●	●	●
Recordkeeping	●	●	●
Shade or cool-down area		●	●
Indoor air movement and humidity control		●	●
Acclimatization for new or returning workers, and during heat waves		●	●
Rest breaks (as needed or 10 min every 2 hours)		●	●
Effective communication means with employees		●	●
Rest breaks (minimum 15 min every 2 hours)			●
Supervisor or buddy system to observe for signs and symptoms			● (+ during acclimatization)
Pre-shift meetings or employee notifications			●

Adding a fourth level is unnecessary when the Regulatory Framework already provides a high heat trigger level. Additionally, even OSHA recognizes the difficulty associated with setting a national "heat wave" definition (similar to the difficulty associated with setting national heat triggers). OSHA states, "OSHA acknowledges that the specific conditions that constitute a heat wave vary across the country; the Agency is open to suggestions for easy-to-use approaches for heat wave definitions that can account for this variability." *See* OSHA SER Background Document at p. 14. We think a "less is more" approach – that is, not including a definition for "heat wave," or additional requirements during heat waves – is better in this regard.

4. The Standard Should Not Require Employers to Collect Information or Inquire About Individual Risk Factors.

In both indoor and outdoor settings, individual risk factors significantly contribute to risk of heat-related illness: some individuals are more susceptible to detrimental effects of heat based on their physical condition and/or their physiological make-up. Occupational heat-related fatalities have been found to occur more frequently in men than in women, in those with preexisting conditions (e.g., obesity, diabetes, hypertension, cardiac disease), and in

those with a preexisting use of certain medications or illicit drugs that predispose individuals to heat-related illness. Other factors, such as age, fitness level, alcohol consumption, prior heat-related illness, and lack of access to air conditioning in housing, also reduce the body's ability to regulate heat and can increase individual risk of heat-related illness. This, of course, is one of the primary reasons identifying and measuring the risk of heat stress in one's workforce is so challenging. Indeed, almost all, if not all, of the very few SERs who mentioned that they had experienced a heat related illness in their workforce stated that the employee's personal choices, including alcohol consumption, during off-time played a major role. This included at least two SERs from the September 7, 2023 Panel meeting (one employee was wearing a nicotine patch, the other had consumed alcohol the night before), and one from the September 18, 2023 Panel meeting.

Notwithstanding the fact that individual risk factors are significant contributors to heat hazard, the heat standard cannot require employers to collect information or inquire about individual risk factors. Such a requirement would be an invasion of employees' privacy, and would implicate concerns about the confidentiality of medical information. Such requirements also implicate numerous state and federal laws, including anti-discrimination laws, the Americans with Disabilities Act, etc. Indeed, this issue was raised by at least one SER at the September 7, 2023 Panel meeting, one at the September 14, 2023 Panel meeting, and another at the September 19, 2023 Panel meeting. Any standard promulgated by OSHA obviously cannot create a conflict between an employer's ability to comply with the standard and the ability to comply with existing laws. Additionally, collection of this type of personal risk factors-type information could fall within OSHA's medical records retention requirements (at 29 CFR 1910.1020) requiring employers to retain this information for thirty-plus years, imposing a heavy and costly administrative burden on employers.

Accordingly, rather than require employers to collect information or inquire about individual risk factors, or establishing a standard aimed at the "lowest common denominator" – which would still miss those most at risk and unnecessarily overregulate at the same time – the standard should address individual risk factors through training. As stated above, this standard should be training-focused, requiring employers to provide effective training on individual risk factors and encouraging employees to respond in the appropriate way if they are affected by any such factors.

5. ***To the Extent the Standard Applies to Indoor Environments, the Standard Should Not Include Requirements for Conditioned Air, or Combination of Air Movement and Humidity Control.***

While we primarily work outdoors, many of our fellow SERs with indoor worksites raised the impossibility of being able to comply with the Regulatory Framework's engineering control requirements. After hearing their concerns, we still think indoor worksites should be excluded from any standard that comes out of this rulemaking, but, to the extent the standard applies to indoor work environments, we think that any broad requirement to condition air, or provide rooms with some combination of air movement and humidity

control, in indoor settings is simply not workable and should not be included in any heat illness prevention standard that OSHA promulgates. Per the Regulatory Framework, OSHA states:

> OSHA has identified the following possible options for engineering controls for indoor work sites:
>
> - Provision of a cool-down area (e.g., break room or trailer) that is air-conditioned or has some combination of air movement and humidity control, can accommodate the number of employees on break, and is located as close as practical to the work area
>
> - Provision of work area controls:
>
> - Option: Increased air movement (except where it would increase exposure to contaminants). Increased air movement could include fans at individual work areas or the entire work site (when temperature is cool enough) or natural ventilation (e.g., open windows).
>
> - Option: Some combination of increased air movement (except where it would increase exposure to contaminants) and humidity control (depending on temperature and humidity status of work area).
>
> - Option: When feasible, air-conditioned work areas or control booths (if applicable)

See OSHA Regulatory Framework at p. 5. While engineering controls could potentially be managed in some areas, we anticipate based on feedback we have heard from other employers that there are many places (e.g., papermaking) where it simply is not feasible to isolate a machine, install much more airflow, or alter the humidity of the environment. This was echoed by numerous SERs as well. Specifically, many SERs at the September 18, 2023 Panel meeting stated that they could not add air conditioning in their work areas for a variety of reasons, such as the amount of makeup air, the size of their work areas, the need for ducts over the entire work area, greater hazard concerns, and/or supply issues. SERs at the September 12, 2023 Panel meeting also described that adding air movement can lead to greater hazards associated with cross contamination of harmful fumes or materials. Accordingly, an "if feasible" condition would be useful for all engineering control options, since we are sure that there are infinite variations in manufacturing facilities where engineering controls are not a simple fix.

As background, while the long-standing legal standards for demonstrating an occupational health standard is either economically or technologically infeasible are high, we believe that inclusion of an indoor air conditioning control, or requirement to provide rooms with some combination of air movement and humidity control, in a heat standard would render

it economically infeasible for vast swaths of the regulated community, making it subject to immediate and successful legal challenge by a host of industries. Likely the same would be true for many employers on technological infeasibility grounds. Installation of air conditioning systems is simply not technologically and economically feasible for all indoor environments.

Specifically, a standard is economically feasible when industries can absorb or pass on the costs of compliance without threatening industry's long-term profitability or competitive structure. *See Am. Textile Mfrs. Inst. v. Donovan*, 452 U.S. 490, 530 n. 55 (1981)(*"Cotton Dust")*. Standards are economically infeasible which "threaten massive dislocation to, or imperil the existence of, the industry." *See United Steelworkers of Am. v. Marshall*, 647 F.2d 1189, 1272 (D.C. Cir. 1981). More than any other engineering control we can imagine, installation of air conditioning systems and the additional requisite ancillary equipment necessary to operate the systems, like customized ductwork for large manufacturing or warehousing facilities, would be staggeringly costly. So too could be the provision of rooms with some combination of air movement and humidity control.

Even retrofitting existing systems likely would not meet the economic test for feasibility in vast numbers of manufacturing facilities. Each system is unique. To the extent systems exist in workplaces, many have had parts replaced or added to them, or have been ungraded, tweaked, and/or repaired over many years (including in some structures that are over a hundred years old), so the thought of "upgrading," or "modifying" them to provide sufficiently cool/moving air in areas throughout the workplace is infeasible.

On top of the extraordinary capital costs of conditioning large buildings, employers would also be adding costs associated with weekly, monthly, quarterly, and annual maintenance checks and tests required to keep large-scale systems working, adding enormous administrative costs for employers. On top of this, some employers have shared that it would be necessary to install a redundant system to keep air cooled during the high heat season. In sum, the cost of air conditioning, or providing rooms with some combination of air movement and humidity control, in all areas where workers conduct activities in hot environments would most certainly bankrupt many companies in many industries, resulting in the very type of industry restructuring the economic feasibility requirement of the OSH Act is designed to prevent.

For many building structures in many different industries, it also would be technologically infeasible to add air conditioning or provide rooms with some combination of air movement and humidity control. Technological feasibility has been interpreted to mean "capable of being done." *See Am. Textile Mfrs. Inst. v. Donovan*, 452 U.S. 490, 509–510 (1981). A standard is technologically feasible if the protective measures it requires already exist, can be brought into existence with available technology, or can be created with technology that can reasonably be expected to be developed (i.e., technology that "looms on today's horizon"). *See United Steelworkers of Am., AFL–CIO–CLC v. Marshall*, 647 F.2d 1189, 1272 (D.C. Cir. 1980) (Lead I); *Amer. Iron & Steel Inst. v. OSHA*, 939 F.2d 975, 980 (D.C. Cir.

1991) (Lead II); *American Iron and Steel Inst. v. OSHA*, 577 F.2d 825 (3rd Cir. 1978). Though this is a high standard to meet, it is not impossible. While air conditioning and/or rooms with some combination of air movement and humidity control are existing technologies that theoretically could be added to just about any structure, it would not be feasible to install ductwork in many existing facilities because of the inability to allocate the space necessary for the system and implement and maintain unimpaired airflow.

Some industries would be even more significantly impacted than others. For example, flour milling operations in the Southern states include many older operations that have been expanded over the decades to include interconnected structures that are separated by brick-and-mortar walls over six inches thick, making air conditioning installation infeasible due to structural integrity issues caused by boring holes for ductwork, as well as issues associated with balancing air to ensure air is evenly distributed throughout the entire workplace. Even if possible, the likelihood that installations of these systems could cause substantial damage to the structure is high. Also, there is a real possibility that subsequent malfunctioning of these "square hole in a round peg" systems could result in mold, rot, or other forms of structural damage. The idea of harmonizing newly installed air conditioning systems in large, interconnected structures, given all these challenges and variables, is simply not doable in many industries, but particularly those that where older and larger buildings are used. In sum, inclusion of a blanket air conditioning requirement or requirement to provide rooms with some combination of air movement and humidity control in a heat standard would render this standard legally impermissible under the OSH Act's feasibility requirements. And it is not necessary. There are other means – much more cost effective – to achieve the same goal.

6. To the Extent the Standard Includes Requirements for Rest/Breaks, They Should be Flexible.

As we know, and as stated by SER after SER at all six Panel meetings, rest breaks and hydrations are part of many effective heat programs. Thes administrative controls are examples of effective alternatives to engineering controls like air conditioning. However, it is critical that these administrative requirements not be prescriptive; rather, flexibility in designing a rest/break regimen tailored to the particular work operations is imperative. Otherwise, central work activities and operations could be impacted, resulting not only in production issues but safety concerns. For example, a requirement for a regimented 10 or 15 break every two hours (under certain heat triggers), as contemplated in the Regulatory Framework, with no flexibility could result in lower manpower than necessary to safely conduct an operation, the loss of a critical co-worker with experience and operational knowledge at the exact "wrong" time to complete a job safely, etc.[8] *See* OSHA Regulatory Framework at p. 7.

[8] Additionally, as our fellow SERs mentioned, including at the September 13, 2023 Panel meeting, scheduling regimented breaks could decrease employee morale and the trust we have built with our employees. The break becomes something we have to give, rather than something we give voluntarily.

It also presents greater hazard concerns in our industry because we work from heights. The location of the rest area is often a factor in deciding work/rest for workers. While rest areas can sometimes be set up on a roof, often times, they cannot (e.g., on steep sloped roofs). Requiring our employees to climb up and down a ladder, donning and doffing substantial amounts of PPE, every couple of hours for a break, may actually put them at more risk. Falls are a leading cause of injuries in the construction industry, so this could be switching hazards (indeed, for a greater hazard). This concern was repeated by various SERs in our industry, as well as one SER who participated in the September 7, 2023 Panel meeting who mentioned that he works in the telecommunications industry, with cell phone towers that reach thousands of feet in the air. He expressed the same concern as we do here about any rigid requirement for rest breaks.

Rather, we believe that self-paced breaks, where employees and supervisors work together to coordinate rest breaks based on a wholistic view of the job and the various potential hazards associated with these tasks, as included to some extent in the Regulatory Framework as an option at or above the initial trigger (but not at or above the high heat trigger), is a safer and better approach to establishing rest break requirements. *See* OSHA Regulatory Framework at p. 7 (presenting an option at or above the initial trigger (but not at or above the high heat trigger) where "[e]mployees are allowed and encouraged to take rest breaks as needed to prevent overheating[.]"). This option should be presented as an option at or above the high heat trigger as well. As SER after SER mentioned at all six Panel meetings, the way we typically handle breaks right now is by allowing and encouraging our employees to take them whenever they need them. Again, we treat our employees like family, and, whether it is for concerns related to heat, a common cold or flu, a strain in their body, or any other legitimate reason, we want them to take care of themselves, first and foremost, always.

We also want to echo a couple of other points made by our fellow SERs. First, breaks are already sometimes "built in" to the schedules that our employees work. This was raised, for example, by a SER at the September 7, 2023 Panel meeting. He described that his employees pace themselves and have a workload that is naturally spread out across many hours. For example, one job might be from 2:00 – 3:00 PM, and another from 3:00 – 4:00 PM. Employees are not expected to make an instant transition; rather, they naturally take a break as they prepare for and begin the new job. We find that to be the case for a number of jobs across a variety of industries.

Second, we understand that OSHA may be concerned that employees will fear retaliation if they are only encouraged (not required) to take a break, and ask to or actually do take a break. Certainly, that has not been our experience, nor seemed to be the case for any of our fellow SERs. However, to rectify this concern, as one of the SERs at the September 12, 2023 Panel meeting mentioned, we think the key is providing training/communication to our employees on the fact that they will not be retaliated against if they ask to take a break and/or do so. This goes back to our position that any heat standard should be centered around training. Here too, we think the best approach is to allow employers to implement

employee self-paced breaks, where employees and supervisors work together to coordinate rest breaks, and to provide training on the fact that employees will not be retaliated against for taking breaks as needed.[9]

Additionally, we noticed that many of the poll questions and discussions during the Panel meetings centered around existing meal/rest breaks. We think that it is important that OSHA take into consideration the applicability of state wage and hour regulations and/or collective bargaining agreements that impact break requirements. For example, can any rigid break requirements set forth by this standard be combined with other existing breaks? How do the breaks line up throughout the day? The myriad of questions that arise from this are complicated indeed. Rather, a flexible, performance-oriented requirement associated with break time is better and necessary to ensure that employers are able to design their staffing programs in a manner that meets existing state requirements.

7. Hydration Requirements Should be Focused on Making Cool Potable Water Readily Accessible and Training Employees on Dehydration Hazards.

As with rest breaks, hydration is another key component to effective heat programs. We support the idea of including hydration requirements in a heat illness standard. However, the requirement should be focused on making cool potable water ***readily available*** and training employees on dehydration hazards. The agency must take care in establishing this requirement because, ultimately, an employer cannot ensure that an employee is hydrated. There are limitations to the authority and power supervisors have over their employees. Rather, it should be sufficient for employers to ensure that cool potable water is readily accessible to employees in a manner that can be imbibed and provide training to employees on the hazards associated with dehydration. Robust training on the importance of hydration, providing ready access to water and/or other hydrating options, not just beverages as set forth in the Regulatory Framework (e.g., fresh fruit, popsicles, etc.), and encouraging regular hydration in hot environments should be the limit of what is required in the standard. Building in any expectation or requirement that employers actually monitor either the amount of water consumed by each employee, or the specific amount of water available ***per employee***, is entirely unreasonable.

In terms of establishing specific quantities of water to be provided, we recognize that, under the Regulatory Framework, and, except for Minnesota, state heat illness prevention standards, include prescriptive requirements regarding the provision of water. Per the Regulatory Framework, OSHA states:

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[9] We do want to point out that, although it seemed to be rare, some SERs shared that certain employees took advantage of their flexible break policies. To the extent that employees are disciplined in such cases, that of course should not be interpreted as retaliation. Additionally, it should be made explicitly clear in any regulatory text for a heat standard that an employers' obligation in this regard is solely to allow and encourage employees to take breaks as needed. To the extent an individual employee does not take a break, that should not be used against the employer as a basis for issuing a citation.

There are existing OSHA requirements for employers to provide drinking water to employees. OSHA is considering specifying additional requirements for location, temperature, and quantity, such as:

- Drinking water must be located as close as practical to work areas
- Drinking water should be suitably cool
- ***Employees should have access to 1 quart (32 fluid ounces) of drinking water per employee per hour for the entire shift, provided by the employer (can be refilled throughout the shift)***
- Employees should have ample opportunity to drink water and must be encouraged to frequently consume water or other acceptable beverages
- Employers are allowed to provide other beverages (e.g., non-caffeinated electrolyte solutions) if they are provided in addition to minimum water requirements, not in place of

See OSHA Regulatory Framework at p. 6 (emphasis added). As set forth in the SER Background Document, all state standards except for Minnesota require employers to provide at least 1 quart of water per hour for each employee. *See* OSHA SER Background Document at p. 18 ("Where drinking water is not plumbed, California requires employers to provide one quart of drinking water per hour to employees for the entire shift (CA, 2005). At certain temperature triggers, Oregon, Washington and Colorado require employers to supply at least one quart of suitably cool drinking water per hour to employees (OR, 2022a; OR, 2022b; WA, 2008; WA, 2009; WA, 2022; WA, 2023; CO 2022).").

We believe that such prescriptive requirements are unnecessary and impose unrealistic expectations on employers. The quantity of water made available to employees should not be set at a specific amount, so long as employees have ready access to the quantity they so desire. Workers know their bodies best, and, coupled with extensive training on the importance of staying hydrated in warmer temperatures, will have the requisite information and education to make the best decisions about the amount of water they consume for themselves.

Additionally, we disagree with the Regulatory Framework language that "[e]mployers are allowed to provide other beverages (e.g., non-caffeinated electrolyte solutions) ***if they are provided in addition to minimum water requirements, not in place of***[.]" *See* OSHA Regulatory Framework at p. 6 (emphasis added). Employers large and small seem to share the common experience of employees preferring electrolyte and other safe, hydrating options over water. As was mentioned by OSHA during OSHA's New England Area Offices' August 9, 2023 roundtable discussion addressing heat illness, sometimes psychology plays a part in making these other options more likely to be consumed. The options, like freeze

pops, tend to be viewed as "treats" by employees, and are often consumed right away (in part also to keep from melting). That has been our experience, as well the experience of other employers, too. Indeed, even though we provide our crews with coolers of water, they are always adding electrolyte powder to it, sometimes in less concentrated form, to make it a little less sweet. Those regularly come back empty. Accordingly, we do not think employers should be penalized for providing other, safe hydrating options in place of water, especially since these options are often healthier than water (any options that include electrolytes provide essential nutrients and minerals), and water is often part of the mixture or an ingredient of these options already.

8. The Standard Should Provide Flexible Acclimatization Requirements and Allow for Self-Managed Acclimatization.

The standard should provide flexibility regarding any acclimatization requirements. As set forth in the ANPRM, "[a]cclimatization refers to the process of the human body becoming accustomed to new environmental conditions by gradually adapting to the conditions over time. Gradual exposure to the condition of concern (e.g., heat) allows the body to develop more robust physiological responses, such as a greater sweat response, to adapt to heat more efficiently." *See* 86 FR at 59320. We are concerned that evaluations of workplace fatalities have shown that approximately 70% of deaths occur within the first few days of work, and upwards of 50% occur on the first day of work, highlighting the consequences of workers not becoming acclimatized to the environmental conditions of the workplace. However, by its nature, acclimatization is unique and individualized, and depends on an employee's personal health and his/her background experience and exposure to and familiarity with hot environments.

Indeed, as OSHA mentions, acclimatization is important for those who may have been previously acclimatized but were out of the workforce or hot environment of the workplace for more than two weeks (e.g., due to vacation or sick leave). Additionally, workers with underlying medical conditions may need more time to fully adapt to the heat. Not to mention, acclimatization periods will be different due to variations in the physical demands of work and the duration/intensity of hazardous heat to which each employee is exposed (depending on site demands). This makes it impossible for employers to use a one-size-fits-all approach. Employers therefore need flexibility and discretion in developing acclimatization plans that will be most effective for the workplaces/workforce. Among the options to address acclimatization should be an allowance for employers, through training, to empower their employees to self-manage their acclimatization periods. Allowing for more self-managed acclimatization through health education awareness and training is key.

To that end, we believe that OSHA has presented a couple of options that, with some changes, seem workable, assuming they stay as options in any regulatory text for a heat standard. Under the Regulatory Framework, for both new and returning employees who have previous experience with the job but have been away from the job for some period

(e.g., 7, 14, or 30 days), OSHA presents the following three options:

- Option: Employer-developed plan that includes heat hazard awareness training before work begins in addition to increased monitoring and communication by supervisor or designee for the first week

- Option: Employer-developed acclimatization protocol based on the work tasks performed by employees, clothing/personal protective equipment (PPE) worn, and environmental risk factors. The standard could specify a minimum protocol for this option.

- Option: Follow high-heat procedures at the initial heat trigger [] for the first week

See OSHA Regulatory Framework at p. 6. We believe the first two options could be workable, with at least a few changes. Specifically, for the first option, and as we discuss below, we do not think "increased monitoring and communication by supervisor or designee for the first week" is the right approach. Again, a standard that relies heavily on supervisors monitoring and making judgment calls about employees' signs and symptoms of heat illness is ill-advised. Supervisors cannot possibly know whether this employee is looking tired v. fatigued, or that employee has heat rash or eczema. Not for one employee, and definitely not for multiple employees. Employees know their bodies best; any requirement to replace the increased monitoring/communication language in the first option should center around increased communication to employees about the importance of reporting any signs or symptoms of heat illness to their supervisors.

As for the second option, first, we do not think the standard should set a minimum protocol for this option. A non-mandatory appendix may be helpful, but ultimately, it should be left for the employer to decide. Additionally, we do not necessarily think that all of the factors listed in the option (i.e., "work tasks performed by employees, clothing/personal protective equipment (PPE) worn, and environmental risk factors") need to be considered. The option should be reworded to state: ". . . work tasks performed by employees, clothing/personal protective equipment (PPE) worn, ~~and~~ environmental risk factors, and/or any other relevant factors." This will help add the type of flexibility employers need with respect to their acclimatization protocols, should they choose this option.

Additionally, and this is where the rubber meets the road, OSHA also provides a fourth gradual acclimatization option for both new and returning workers (one slightly different from the other) under the Regulatory Framework:

New employees:

- Option: Gradual acclimatization to heat:

  - First day – heat exposure restricted to 20 percent of a normal duration
  - Second day – heat exposure restricted to 40 percent of a normal duration
  - Third day – heat exposure restricted to 60 percent of a normal duration
  - Fourth day – heat exposure restricted to 80 percent of a normal duration
  - Fifth day – normal duration of heat exposure

Returning employees who have previous experience with the job but have been away from the job for some period (e.g., 7, 14, or 30 days)

- Option: Gradual acclimatization to heat:

  - First day – heat exposure restricted to 50 percent of a normal duration
  - Second day – heat exposure restricted to 60 percent of a normal duration
  - Third day – heat exposure restricted to 80 percent of a normal duration
  - Fourth day – normal duration of heat exposure

See OSHA Regulatory Framework at pp. 6-7.

As background, we are aware that OSHA and NIOSH have historically recommended the "Rule of 20%," as reflected in the gradual acclimatization option for new employees (and as slightly modified for returning workers) under the Regulatory Framework, for acclimatizing workers.[10] However, we have found this approach unnecessary and/or impractical/infeasible in many instances, and very costly, yet yielding little to no benefit. For example, sometimes we hire employees who have been performing the same tasks literally down the street in the same environmental conditions, and thus, already have been properly acclimatized when they begin work for us. There would be no benefit or need to apply the "Rule of 20%" to a worker under these circumstances, and there is a major cost associated with such a rule. We see that OSHA is considering exempting such employees, and support such an exemption. *See* OSHA Regulatory Framework at p. 6 ("Exemption: Newly hired employees who report recently (e.g., in the prior week) performing the same work tasks in similar heat conditions could be exempted").

However, our concerns by no means stop there. We are aware of other employers that hire employees on short-term assignments, such that, by the time workers are properly acclimatized according to the "Rule of 20%," the assignment has concluded. In that situation, while it would be important to ensure acclimatization, applying the "Rule of 20%" is not feasible. Similarly, another employer described to us that one of the challenges associated with acclimatizing workers is that, in high turnover occupations, there is often a

[10] As set forth in the ANPRM, "[u]nder this regimen, workers would only work 20% of the normal duration of work on their first day in hazardous heat conditions performing job tasks similar in intensity to their expected work, increasing the work duration by 20% on each subsequent day until performing a normal work schedule. For example, if the normal workday lasts 8 hours, then new workers should work no more than 1 hour and approx. 40 minutes (20% of 8 hours) on their first day in the heat, and spend the remainder of the workday doing work tasks without heat stress." *See* 86 FR at 59320-59321.

need "to work immediately" due to operational demand. There are also complications associated with large scale, multi-site locations. One employer said that, at such locations, management may require an advanced software management process to verify acclimatization processes are adhered to and effective. But not all employers, particularly small businesses, may have sufficient resources to acquire and use such software. To subject all employers to a one-size-fits-all acclimatization approach, especially such a costly one like the "Rule of 20%," would, at minimum, post extraordinary staffing concerns, and in many cases, make staffing projects impossible.

Indeed, we also try to keep a stable number of workers on a job, which makes vacations or other leaves doubly onerous, as we would need to establish coverage for a week even after the employee returns. Additionally, any temporary cover employees working in the heat would need to be acclimated – not just for the time covering the employee, but for a week beforehand. This means that an employee out for a week requires ***three weeks*** of work by a covering employee. And that is all assuming that there is other work for the acclimatizing employee to be doing, which we think is an incorrect assumption made by OSHA. *See* SER Background Document at p. 34 ("Note that the amount of work time actually lost due to acclimatization will be tempered by the fact that workers may be able to complete other tasks during periods at or above the initial heat trigger so long as they are not working in those conditions. OSHA estimates that workers, on average, would spend 50% of their non-heat exposed time during acclimatization on tasks in non-heat exposed work conditions."). This carousel effect of employees covering employees is unduly burdensome and can be cost prohibitive. At any one time, we might not have enough people to keep going.

Instead, we urge OSHA to provide flexibility with respect to any acclimatization requirements. This will allow employers to take into account the unique factors specific to their workplaces and employee populations. For example, some employers establish, for new employees, a period of reduced workload until such time the employee can perform as expected. And, as we heard from multiple SERs, including specifically at least one SER during the September 12, 2023 Panel meeting, sometimes acclimatization is not formalized, but already built into existing onboarding/orientation schedules for new employees. For example, the SER mentioned that, when hiring, they conduct a month or more of training before the employee is ever tasked with full operational responsibilities. In this sense, new employees are already acclimatizing.[11] Other employers may conduct hazard assessments to determine whether new employees have already been properly acclimatized. And we, as

[11] To that point, we do think that acclimating returning employees is more difficult than new employees from an administrative standpoint. Again, many new employees naturally go through an acclimatization process because they are not hired and immediately given a full schedule. Training, orientation, and onboarding all play a vital role in preparing new employees on how to work safely when conducting their job tasks. However, returning employees, as mentioned by numerous SERs, might have come back from even warmer locations, which is particularly true in the warmer summer months, when employees like to visit the beach, go fishing, or partake in other outdoor activities. In those instances, acclimatization simply is not necessary, yet, it will be exceedingly difficult for us to ask, employee-by-employee, what they did during their time away. Accordingly, we believe that any acclimatization requirements should be more focused on new employees. Additionally, we believe seven days is typically too short of a time period to be considered "returning."

well as our fellow SERs, provide extensive training to employees on the importance of acclimatization. A comprehensive, yet tailored and flexible, approach in this regard is necessary.

9. The Standard Should Provide Flexibility Regarding Employee Monitoring Requirements and Limit Supervisor Responsibilities to Circumstances Where Employees Report Signs or Symptoms of Heat Illness.

The standard should provide flexibility regarding any employee monitoring requirements, and limit supervisor responsibilities to circumstances where employees report signs or symptoms of heat illness. While we recognize that physiological, medical, and exposure monitoring of workers exposed to heat hazards can prevent heat strain from progressing to heat-related illness or death, flexibility must be provided in this regard. As set forth in the Regulatory Framework, OSHA states:

> The standard could require the supervision of employees for signs and symptoms of heat-related illness. Options could include:
>
> - At or above the initial heat trigger []: employers maintain effective communication with employees by voice, observation, or electronic means (such as a handheld transceiver, phone, or radio) and provide regular communication
>
> - At or above the high-heat trigger [] or for new or returning workers who may not be acclimatized or during heat waves:
>
> - Option: Observation of employees for signs and symptoms by coworkers, also called a buddy system (using either visual or verbal communication)
>
> - Option: Observation of employees for signs and symptoms by supervisor, with no more than 20 employees supervised per supervisor or designee

See OSHA Regulatory Framework at p. 7. First, this should not be characterized as a supervision requirement; it more accurately would be an employee monitoring (or, to the extent OSHA does not want to confuse these requirements with monitoring/measuring for temperature, observation) requirement.

Second, additional options should be presented. As set forth in the ANPRM, employee monitoring activities may include self-monitoring of urine color and monitoring of heart rate and core body temperature. SERs who participated in the September 12 and 18, 2023 Panel meetings described how they provide and train on urine charts so that employees can determine whether they may need to drink more water. Additionally, individual-level biomonitoring with wearable technologies may be an option in some occupational settings, assuming appropriate training is provided to those doing the monitoring and with access to

the data.[12] Monitoring activities also may include communication and buddy systems, as set forth as an option under the Regulatory Framework when temperatures are at or above the high-heat trigger or for new or returning workers who may not be acclimatized or during heat waves, where workers are educated in signs and symptoms of heat-related illness and proactively look for signs and symptoms in fellow workers and encourage them to rest, hydrate, and find shade or seek emergency medical attention if the worker is experiencing signs of heat-related illness. These should all be options, not requirements, under both initial and high heat trigger / non-acclimatized worker / heat wave scenarios, from which employers can choose based on what fits their workplaces and work populations best.

This is especially true because, for certain employers who have lone workers for example, the options presented under the "at or above the high-heat trigger [] or for new or returning workers who may not be acclimatized or during heat waves" section are not options at all. Such employers cannot employ a buddy system for lone workers, nor can they have supervisors observe employees for signs and symptoms, because, definitionally, the lone worker is alone. Equally effective is allowing employers to choose the monitoring activities that work best. We have found a variety of methods to be effective, and those should not be taken away and replaced with a set of prescriptive requirements which may or may not work for a specific worksite. Accordingly, to the extent that there are employee monitoring requirements in the standard, those requirements should be flexible.

Third, and importantly, any requirements placed on supervisors should be limited to circumstances where employees report signs or symptoms of heat illness. As discussed above, the wording "observation of employees for signs and symptoms" is extremely vague.[13] We rely on our employees to speak up, but if they don't, and choose to self-diagnose or self-manage, it is impossible for us to know if they are experiencing signs or symptoms of heat illness. Is this employee sweating too much? Too little? Is that employee looking tired? Fatigued? Supervisors cannot possibly know the answers to these questions, not for one employee, let alone multiple employees. Again, employees know their bodies best, and any requirement regarding supervision should be limited to circumstances where employees report signs or symptoms of heat illness. Training employees on the importance of reporting any signs or symptoms of heat illness to their supervisors is key. Otherwise, it would be difficult to tell what would be considered

[12] Although it does not appear this way, to the extent that OSHA intends to require employers to equip all employees with monitoring equipment and manage the results/actions derived from this information, the costs would be tremendous. Additionally, there would be extra complexity associated with managing the number of devices and their use in multi-site locations. Such locations would have to assign a manager to distribute the devices daily and track data. This would simply be infeasible, particularly for small businesses. Moreover, serious concerns regarding confidentiality are implicated with any requirement to gather and monitor biological data, by individual personnel. Indeed, some of the information could be subject to OSHA's Access to Employee Exposure and Medical Records Standard, 29 CFR 1910.1020.

[13] Our concerns here apply equally to other parts of the Regulatory Framework that use similar wording. *See e.g.*, OSHA Regulatory Framework at p. 8 (stating that the standard could require employers to "[r]espond to reported ***or observed*** signs and symptoms of heat illness.") (emphasis added).

sufficient action by an employer, especially if a heat illness were to occur. Greater emphasis on worker engagement/training will make for a stronger, not weaker, standard.

10. The Standard Should Not Include Any Requirements Regarding PPE or the Multi-Employer Worksites, But Should Keep the Section on Additional Administrative Controls Broad and Open-Ended.

We understand that OSHA may be contemplating requirements regarding PPE and multi-employer worksites. This is wholly unnecessary as existing standards/policies already govern these topics. *See* 29 CFR 1910.132; *see also* OSHA Multi-Employer Citation Policy (December 10, 1999). With respect to PPE specifically, employers have very differing needs with respect to PPE usage, and a standard should not mandate one way or another. As roofing contractors, cooling PPE, such as cooling vests, and other cooling equipment, like cooling towels, can create greater hazards. First, they are heavy, and become even heavier because they get wet/soggy. This makes it very difficult for employees to climb up and down ladders, for example. Second, they are difficult to wear with other PPE, such as fall protection, and might even interfere with essential PPE components. We have provided our crews with cooling PPE options, and frankly, like employees of our fellow SERs, our employees too did not like them.

Additionally, per the Regulatory Framework, OSHA states:

- Additional administrative control options could include:
    - Altering work schedules (i.e., scheduling outside of the typical workday or season)
    - When the high-heat trigger [] is met or exceeded, holding a pre-shift meeting or notifying employees of the following:
        - High-heat procedures are in effect
        - Encouraging employees to drink plenty of water
        - Reminding employees of their rights to take rest breaks as needed
        - Location of shade and/or cool-down areas, breaks, and water for mobile work sites
        - Designating employees to call 9-1-1 in a medical emergency
    - In indoor environments, restricting access to excessively high heat areas (e.g., those with ambient temperatures at or above 120°F) by only allowing employees that have been trained to access these areas and placing warning signs outside or near these areas

See OSHA Regulatory Framework at pp. 7-8. We think OSHA should keep these options (in particular, the option for altering work schedules, which is a method we use at times), but

make this section broader and open-ended so that employers can use any reasonable (including innovative) administrative controls that work for their workplaces.

11. To the Extent that There Are Any Recordkeeping Requirements, They Should be Limited to Training Records Only.

Like our fellow SERs, we have significant concerns with the recordkeeping section of the Regulatory Framework. Per the Regulatory Framework, OSHA states:

> The standard could require employers to maintain any or all of the following records:
>
> - Environmental monitoring data (maintained for a certain period of time)
> - A record of any heat-related illness or injury (including those that only require first aid) and the environmental and work conditions at the time of the illness or injury
> - An accurate record of all heat acclimatization for new and returning employees

See OSHA Regulatory Framework at p. 10. Additionally, OSHA states that "[t]hese records would need to be maintained and made available in accordance with OSHA's Records Access standard (29 CFR 1910.1020). *See* SER Background Document at p. 25. Collecting and maintaining environmental monitoring data, records of any heat-related injuries and illnesses, and acclimatization records for all new and returning workers for 30+ years would be completely unnecessary, and, particularly for SERs, extremely challenging, if not impossible, and an absolute waste of resources that would better be spent on other, more meaningful safety initiatives (including, for example, actually implementing heat illness mitigation measures).

First, as to environmental monitoring, such monitoring data is simply a weather reading, most of which is publicly available and archived anyway. To the extent OSHA is contemplating including this as a requirement so that it can ascertain indoor temperatures, again, we do not think indoor heat should be covered in this rulemaking. Additionally, there is no reason to keep environmental monitoring data, let alone maintain it for 30+ years, under OSHA's Records Access Standard, 29 CFR 1910.1020. While we understand the motive for requiring employers to keep certain records for such a long time period because of the latency period of certain illnesses, that is not the case here. For example, the preamble to OSHA's Hexavalent Chromium Standard provides:

> The final rule also incorporates the requirement that employers maintain and provide access to records in accordance with OSHA's standard addressing access to employee exposure and medical records (29 CFR 1910.1020). The medical and exposure records standard requires that exposure records be kept for at least 30 years and that medical records be kept for the duration of employment plus thirty

> years. ***It is necessary to keep these records for extended periods because of the long latency period commonly associated with cancer. Cancer often cannot be detected until 20 or more years after first exposure. The extended record retention period is therefore needed because causality of disease in employees is assisted by, and in some cases can only be made by, having present and past exposure data as well as the results of present and past medical examinations***.

See 71 FR 10100 at 10371 (February 28, 2006) (emphasis added). For the vast majority of heat illnesses, and certainly, for those being addressed by this rulemaking, the concern is about acute, not chronic, illness.[14] This is not like hexavalent chromium or asbestos or lead or other similar monitoring data, which can let employees know about any chronic and/or latent health conditions. Rather, any heat standard that is issued from this rulemaking is meant to address immediate illness/injury, as reflected at least in part by the Regulatory Framework's language regarding supervision and medical treatment and heat-related emergency response.

Second, as to recording heat-related injuries and illnesses, OSHA already has requirements about recording heat-related injuries and illnesses that are work-related and meet recording criteria. Those are in OSHA's Recordkeeping Standard, 29 CFR 1904.4. We know OSHA means for employers to record ***all*** heat injuries and illnesses, despite the severity and despite work-relatedness. However, that is a significant departure from OSHA's existing Recordkeeping Standard. The Recordkeeping Standard was devised with certain boundaries – including boundaries on severity and work-relatedness – and (arguably) expanding the Recordkeeping Standard through more specific standards, such as a heat standard, could be tantamount to underground or backdoor rulemaking.[15] Should OSHA wish to change its Recordkeeping Standard, it should do so through a separate rulemaking.

Third, as to acclimatization records, it goes without saying that keeping acclimatization records of all new and returning employees would amount to piles and piles of paper, for large and small employers alike. Even if collected and stored electronically, that would amount to substantial data storage costs, which again, small businesses might not be able to readily (or actually) afford.

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[14] We acknowledge that, in OSHA's ANPRM, OSHA states that ". . . there are some health conditions associated with occupational heat exposure that may take many years to manifest in workers previously exposed to hazardous heat due to the latency period between exposure and symptom onset (Gubernot et al., October 2014)." *See* 86 FR at 59311. However, immediately thereafter, OSHA states, "For these illnesses that develop over time, it is unlikely that the current national datasets of occupational illnesses and injuries associate those outcomes with hazardous heat exposure." *See* 86 FR at 59311. Accordingly, we do not believe OSHA has adequate data to support a showing of significant risk to material impairment of employee health as related to any chronic heat illnesses, at least not at this point.

[15] We recognize that OSHA's COVID-19 Healthcare Emergency Temporary Standard ("ETS") contains recordkeeping provisions, include a requirement for covered employers to keep COVID-19 Logs to track all COVID-19 cases, regardless of work-relatedness. *See* 29 CFR 1910.502(q)(2)(ii). However, the COVID-19 Log was meant at least in part to assist with contact tracing efforts. Here, no such concern exists; heat illness is not contagious.

To that end, as discussed more broadly above, the estimates in the SER Background Document are extremely low. Estimating that a person would spend 5 minutes per measurement to take heat recordings using measurement equipment such as a heat index monitor, 5 minutes per employee recording heat-related illness or injury, and 10 seconds per employee recording acclimatization each time, is not realistic. *See* OSHA SER Background Document at p. 44. Taking a measurement is one thing (which is still more time-consuming than the estimates provided). Recording and maintaining it takes extra effort. Also, heat injuries and illnesses are often very difficult to determine, especially due to personal health conditions that our employees might have that involve similar signs and symptoms. That determination alone could take days. And documenting acclimatization could get very complicated based on employee schedules.

Recordkeeping will be an administrative nightmare for small businesses. We already have to keep and maintain numerous documents. If we had to keep even one of these sets of documents, we think we would have to hire someone new, like some of our fellow SERs mentioned too. Again, we do not have the manpower for this. We are already wearing too many hats, and need to focus our efforts on what really matters – keeping our employees healthy and safe, not unnecessary, needless paperwork.

CONCLUSION

We respectfully request that the SBREFA/SBAR Panel give meaningful consideration to the comments and recommendations provided herein as it develops and delivers its Final SBREFA Report, and as the agency potentially moves forward to develop a proposed standard to address occupational heat illness.

Sincerely,

/s/ Rodney Petrick
Rodney Petrick
Consultant to Business Operations, Ridgeworth Roofing Co., Inc.

/s/ John Fleming
John Fleming
President, Weathercraft Co. of Colorado Springs

Occupational Safety and Health Administration
Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings
Small Entity Representatives

[i] At the outset, we urge OSHA to take into consideration the views expressed by the majority of the U.S. Supreme Court in its decision in *Nat'l Fed'n of Indep. Bus. v. Dep't of Labor*, 142 S. Ct. 661 (2022). While there surely are widely divergent views on the propriety of the Court's decision, the agency should be mindful of the Court's viewpoint and position on the limitations of OSHA's authority to regulate generalized hazards that are not uniquely "occupational" in nature. Our point is not to agree with the Court on these boundaries; we do not express a view on this point. However, we do recognize that those boundaries have been clearly established, and believe, therefore, that the agency now must use the guideposts clearly laid forth in that decision in this rulemaking. To do otherwise would subject the agency and the regulated community to years wasted and significant resources expended on a rule for naught – because any final rule scoped beyond the Court's newly established guideposts would likely be found to be beyond the agency's authority to promulgate and impermissible. We will continue to be heavily involved in this rulemaking process, and will do our best to provide information, data, thoughts, and insights based on our programs, and our views about how to best ensure U.S. workforces are protected from the hazards of heat exposure. OSHA similarly will continue to devote significant of its scarce personnel resources to this effort. This exercise should not be in vain. OSHA should therefore proceed cautiously and carefully in this rulemaking. There exist some red flags that bear noting, and some overarching alternatives to establishing a standard at this point that should be considered:

a. Heat exposure could be viewed as the very type of ubiquitous, broad hazard to which all humans are exposed, rendering a standard designed to control and protect against it the very type of hazard the Supreme Court cautioned against;
b. Heat exposure in both indoor and outdoor environments is undoubtedly a recognized hazard for which OSHA has ample authority under the General Duty Clause to control (including through its Heat National Emphasis Program); and
c. Developing the boundaries, requirements, and thresholds for a heat illness standard presents particular challenges to the agency because there are so many personal health conditions and risk factors (obesity, high blood pressure, diabetes, etc.) that greatly impact the onset of heat-related illness.

It is with this caution that we provide the following comments.

Heat Injury and Illness SBREFA

Meeting Comments (Participant meeting date: Wednesday, September 13, 2023)

I am thankful to have been able to participate and provide input during the review process for the Heat Injury and Heat Illness Standards Proposal. As a farmer, I am constantly concerned with all aspects of safety for our employees. We want our workers to be safe, healthy and comfortable. Employees are the most valuable part of our farm. I recognize that farmers can grow great crops, but without the employees to harvest them we would not be successful. The success of my farm is dependent on the employee's success. Although the majority of our employees are seasonal, most of them choose to return to my farm to work year after year. The high return rate is something that we are proud of. I know that in my area workers have plenty of choices for farm work and we work hard to provide a safe, healthy and pleasant work environment which encourages employees to return year after year.

We (like many farmers) are working outside, alongside our employees every day, which gives us a first-hand perspective of their working conditions and how those conditions are constantly changing with the weather. Safety plans, training and practicing those plans are essential. The idea of heat-related training is a great idea, education is critical for employers and employees. I was impressed with the great ideas for training, and employee protection that other participants brought up during the meeting. It was evident that the employers care for their employee's wellbeing and most were already doing several of the items that are listed in the suggested framework. We know our individual circumstances better than anyone else, and we know and care about our employees.

A new standard and increased regulations are not necessary because OSHA already enforces existing standards related to heat stress and illness through the General Duty Clause. Businesses are all individually unique, making it difficult to create a one-size-fits-all standard specifically in agriculture. There are too many variables that are not accounted for in the proposal.

-Different regions and seasons have drastically different climates. For instance, the body reacts differently in 85 degrees in the humidity of Georgia versus 85 degrees in the arid climate of Colorado. High temperatures in the shade of a mature apple orchard feel very different than high temperatures in an open, sunny tomato field.

-The type of work being performed creates variables. Hand harvesting using a ladder will cause an employee to react differently than machine harvesting or ground work.

-Mandated break times would not be practical; it is healthier to allow an employee to take a break when they feel that they need to rather than them waiting for an arbitrary designated break time.

-A mandated temperature for drinking water would over step employee choice/preference and could cause them to consume less water if the temperature was not favorable to them.

-Using vehicles as a cooling off area is a great option, but mandating the number of vehicles to be on-site is not practical as the size of the vehicle is not taken into consideration.

Additionally, businesses that fall under the jurisdiction of other agencies need to be considered and those other agencies should be invited to provide input prior to implementing a new standard to ensure that there are not competing regulations.

Prevention is the best remedy for heat-related illness and injury. OSHA should continue to provide resources for training and guidance, such as templates for employers to use as a starting point to create their individual heat injury and heat illness safety plan.

I have experienced how beneficial prevention and training for heat safety is on my farm; although 100% of our work is classified as outdoor (open shop setting or outside) we have not had a heat-related illness in over 50 years. Our program includes training for prevention - including awareness of personal choices made outside of work that may affect how the body reacts to heat stress while working, symptoms and treatment. Training is completed annually for full-time employees, and at the beginning of each season for seasonal employees. All training is provided in the language that the employee is best able to comprehend. An essential part of our safety program is practice. We go through a scenario step-by-step to prepare the employees for what to expect and to help them to be as comfortable as possible should an emergency occur.

OSHA Heat Hazard: Considerations for the Restaurant Industry

To support OSHA's goal of safeguarding workers from the risks associated with excessive heat exposure, it is crucial to adopt effective policies that businesses of all sizes can practically implement. Restaurants have some unique feasibility constraints that should be considered in developing these policies. The restaurant industry seeks regulations that acknowledge these challenges and protect employee safety without adversely impacting compliance with other regulations or overall operations. Open and ongoing collaboration between OSHA and industry stakeholders will be essential to striking the right balance and developing effective regulations that benefit all parties involved.

I. Feasibility Considerations

Ease of Implementation: Please keep in mind that the restaurant industry encompasses a diverse range of businesses. Most are small businesses without legal or HR departments. To maximize compliance, the regulations should be simple and straightforward, allowing operators of all sizes to implement them without undue complexity.

Cost Considerations: Because most restaurants are small businesses operating on very narrow profit margins, regulations should be as cost-effective and flexible as possible. The goal is to minimize financial burdens while ensuring safety.

Regulatory Compliance: Restaurants already operate within a highly regulated environment, which includes compliance with state, local, and federal regulations. Ensuring harmony between OSHA standards and other compliance obligations (for example, food safety requirements) will help restaurants maintain their commitment to safety without incurring additional costs.

II. Physical Considerations of Restaurants

Equipment: Restaurants rely on various commercial cooking equipment, such as gas ranges, broilers, ovens, and fryers, which inherently generate heat during food preparation. These appliances make isolating hot surfaces or shielding radiant heat sources challenging.

Space Limitations: Many restaurants, particularly those in urban or leased spaces, cannot make significant alterations to their physical layouts. This often makes it impractical to create indoor cool-down areas, as space is already optimized for essential functions such as food preparation and customer dining.

Attire: Certain clothing items, like chef coats and head coverings, are designed to protect employees from contact with hot food items or cooking surfaces while ensuring hygienic conditions. These garments are often constructed of knit or woven fibers and serve as an outer layer of protection. Any restrictions on attire should consider these critical safety and hygiene factors.

Food Safety Requirements: The restaurant industry must adhere to strict food safety standards, including heating specific types of food, such as eggs, meat, poultry, and fish, to precise temperatures. Maintaining these established protocols is essential for employee and customer safety.

III. Special Considerations for Outdoor Areas and Food Trucks

Temperature Challenges: It will be important to recognize the inherent challenges of regulating temperatures in outdoor dining spaces, food trucks, and other environments that lack temperature controls. Tailoring recommendations to these environments will be key.

Routine Movement: In many restaurant settings, employees frequently move between indoor and outdoor areas during their shifts to serve customers. This movement is essential for providing efficient and attentive customer service. Any new regulations should recognize the necessity of this routine movement and allow flexibility to accommodate the practical needs of restaurant operations while ensuring employee wellbeing.

IV. Personnel Protocols

For restaurants and other commercial kitchens, the following personnel protocols are widely used and very effective at protecting employees from heat hazards while maintaining a safe and functional environment:

Access to Cool Drinking Water: Restaurant employees should have full access to cool drinking water during their shifts. Adequate hydration is essential for maintaining health and safety.

Cool Down Breaks: Restaurant employees should have the ability to take cool-down breaks during their shifts. These breaks are essential for employees to rest, hydrate, and cool off, ensuring they can perform their duties safely and effectively.

Acclimatization for Employees: Particularly for new workers and/or hot months, heat acclimation policies can be very effective to prevent heat illness.

Training and Education: Ensuring that all employees are trained on heat illness prevention protocols is also an important way to prevent dangers and quickly respond if a medical situation develops. Employees should also be encouraged to speak up if they feel ill or need a break.

From: Rossi, Peter <prossi@vermontelectric.coop>
Sent: Wednesday, October 4, 2023 12:15 PM
To: stone.jessica@dol.gov; Lundegren, Bruce E. <Bruce.Lundegren@sba.gov>; Joshua.j.brammer@omb.eop.gov
Cc: Duggan, Martha A. <martha.duggan@nreca.coop>; Towne, Rebecca <rtowne@vermontelectric.coop>; Cohen, Andrea <acohen@vermontelectric.coop>
Subject: Follow up to Vermont Electric Cooperative participation in the recent SBREFA panel on Heat Injury & Illness

Good afternoon,

Thank you for the opportunity to participate in the SBREFA panel on Heat Injury and Illness held on Monday September 18.

VEC appreciates the time that each of your agency's spent listening to the perspective of an electric cooperative among many industries represented.

VEC would like to emphasize some points we made on the panel, especially the recommendation that any industry which has had few, if an, reportable heat related incidents be exempt from any future heat injury rule.

1. VEC is the local electric utility for over 33,000 members (41,000 meters). We manage 2,900 miles of transmission and distribution lines across 2,500 square miles in Northern Vermont. VEC has 106 full-time employees and utilizes dozens of contractors.

2. Approximately 60 percent of our company is represented by the International Brotherhood of Electrical Workers (Local 300 Union).

3. As a not-for-profit entity owned by the members we serve, our focus is on delivering electricity in a safe, reliable, and affordable manner

4. Due to the nature of our field work, we are acutely aware of the hazard of both extreme heat and cold. In response, we have written guidelines and operating procedures that address rest, hydration, and rotation of crews out of the elements. As a result, we have had **0** reportable cases of heat illness or injury in the last **10+** years. Similar records are noted throughout the electric cooperative industry.

5. Therefore, we recommend that any rule promulgated by OSHA to address heat injury and illness should exempt industries, such as ours, that have few, if any, reportable incidents.

6. However, if OSHA does not accept the above recommendation, we propose the following:

a. The OSHA Heat Injury and Illness rule be very general as it is exceedingly difficult, if not impossible, to draft a rule that reflects the wide differences in targeted industries. As was emphasized by the panel discussions, “one size” certainly will not fit all.

b. Temperature triggers, as discussed by the panel, are unrealistic, should be re-evaluated, and should be set at a regional/local level.

c. Even though VEC records daily temperatures (generally for billing purposes to compare current usage to the same time the year prior), we are recommending the rule remove this requirement. There are many reputable and openly available sources of temperature data. Any requirement to have employers to record temperatures, especially across such a large territory, is administratively and financially burdensome. Doing so brings no value for the cost to our employees or members.

d. The discussion of acclimatization demonstrated that this is little to no benefit, or need, to have workers acclimatize, especially when working in emergent situations such as restoring power in the case of an outage. Again, that requirement is administratively and financially burdensome with no value to our employees or members.

Again, thank you for the opportunity to make our concerns know to the panel. VEC is a certainly willing to answer any further questions you may have.

Best regards,

Peter J. Rossi
Chief Operating Officer

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To: Bruce Lundegren, Counsel, Office of Advocacy, SBA

From: Dr. Stephen Sims, SomerSplash Waterpark, Somerset, KY

Subj: Summarized comments for OSHA Heat Injury and Illness SBRFA, September 18, 2023

Date: October 3, 2023

Background:

- Dr. Stephen Sims
- I represent SomerSplash Waterpark, a municipal-owned waterpark, open for the 12 weeks each year spanning from Memorial Day to Labor Day. We are located in Somerset, KY where the temperature for most of the summer is over 90 degrees Fahrenheit plus humidity.
- Attendance each summer is generally just under 100,000 or about 1,800 a day.
- Our workforce is comprised of 3 full-time staff and approximately 150 seasonal and part- time staff, about half of whom are in aquatics, with the others in food and beverage, administration, maintenance and admissions.
- The vast majority of our summer staff are young people (high school and college-aged) working for us during their summer holiday from school.
- While there is a lot of variation within the attractions industry, the ratio of our part-time to full-time staff, age and experience of workforce, and seasonality is typical of the industry.

Current Practices include:

- Accommodating and minimizing the impact of heat is something SomerSplash, and the industry, have been doing for the comfort and safety of our guests and employees for many years which is why the record on heat injury in our industry is excellent. Some examples of SomerSplash practices, which are widely used in industry:
    - Every year every employee goes through KY OSHA training on heat protocols.
    - Regular staff rotation and breaks in cool areas and/or shade.
    - Manager and employee training to identify heat illness.
    - "Buddy" system
    - Availability of potable water
    - Shade in a variety of forms, depending on position i.e. lifeguards have umbrellas

General Recommendations:

a. OSHA should focus resources by deferring to industry standards where they exist and industry has a good record. A good record illustrates that the industry is already managing the issue with sound practices. OSHA has statistics for most industries. For example, in our NAICS code, according to OSHA statistics from 2018-2021 there were 2 reports of heat injury and illness despite well over 1 million employees.

   Unlike many industries, the attractions industry workforce, work in conditions that have been carefully curated for the comfort of their attractions' guests. The workforce has access to shade, water, established first aid stations, air-conditioned areas, and other amenities available to guests. At SomerSplash Waterpark managers and employees are trained in how to avoid heat injury and illness. Managers are very aware of the signs of heat illness and ensure their employees are provided the shade, water, access to cool areas and increased respite from the heat, as is needed.

b. Temperature thresholds should be localized. Virtually every day in the summer in Somerset, Kentucky is hotter than OSHA's suggested threshold temperatures. We hire locally and our workforce is acclimated to their environment. Utilizing an 80 or 87 degree heat index would essentially mean every day requires additional pre-caution and reporting, when in fact our workforce and guests are used to operating in these temperatures. Temperatures well in excess of what is typical in a particular location would be a better indicator of when additional pre-caution is necessary. Tying heightened precautions to heat advisories or sustained temperatures 10-15 degrees above seasonal averages would be a better indicator of when additional precautions should be taken.

c. OSHA should exempt small businesses as suggested in the materials provided but they should use full-time permanent employees to determine what constitutes a small business, not all employees. A very small business in the attractions industry, has many times the number of full-time year-round employees during their high season. A multiple of 10 to 30 employees working in short shifts over the 7 days the facility is open during high season for every 1 full-time permanent staff person is not uncommon. Using full-time or full-time equivalent is a much better indicator of business size.

d. OSHA's scheduling proposals for "acclimatization" would be very burdensome, costly, and provide questionable value. We are already juggling lifeguard breaks, inevitable vacations, part-time scheduling, youth hour limitations etc. If a high school age student takes a week summer vacation with their family, would we have to put them on a schedule to "re-acclimate?" Virtually all of my workers take time off during the summer which could trigger the suggested re-acclimatization requirements. Accommodating this could require me to hire up to a third more employees which would be administratively difficult, if not realistically impossible in our small town and financially unsustainable.

   Additionally, how will the suggested new staffing requirements reconcile with other staffing requirements and safety protocols. For example, we have safety requirements for lifeguards and ride operators, staffing ratios and other requirements in place for the safety of park guests. Reconciling break timing with these other requirements will be difficult, especially for a small business, and could put businesses in a position of being unable to comply simultaneously with state and federal safety regulations and heat injury and illness requirements.

e. State-based regulation. Given the wide variation in temperature and acclimatization in different parts of our country, this is one issue which is best addressed at the state level, not federal level. A summer in Oregon or Wisconsin is very different than a summer in Kentucky or Louisianna.

f. Flexibility.
   i. Heat impacts each individual differently. Flexibility is necessary so each employer can assess what is needed for their employees. SomerSplashWaterpark seasonal workforce is comprised primarily of young people. Heat will likely impact them differently than similarly situated seniors, for example. However, even within a group of young people, some spend more time outside, are more fit, drink less caffeine – we take our employees as they arrive. There are legal limitations to what we can ask our employees.
   ii. SomerSplash Waterpark, and the attractions industry in general, is set up for the comfort and enjoyment of guests during the summer. Our workforce has access to

the same amenities – ample water, shade, air-conditioned rooms and first aid stations. Should OSHA include industries such as the attractions industry in their regulation I urge you to have a programmatic regulation that is extremely flexible. The environment for a lifeguard at a waterpark is very different than a roofer or highway contractor. Each of these industries needs the flexibility to ensure their workforce is safe in their own unique environment.

OSHA SMALL BUSINESS ADVOCACY REVIEW PANEL

REGULATORY FRAMEWORK FOR POTENTIAL HEAT INJURY AND ILLNESS PREVENTION IN OUTDOOR AND INDOOR WORK SETTINGS STANDARD

COMMENTS OF BRIAN TULIP, LARCH TREE SERVICE, LLC

RUSSELL, NEW YORK

October 2, 2023

COMMENTS OF BRIAN TULIP, LARCH TREE SERVICE, LLC

Larch appreciates the opportunity to participate as a Small Entity Representative (SER) in OSHA's Small Business Advocacy Review (SBAR) Panel. As we stated during the panel, Larch is a tree removal company that provides several services such as tree removal and utility line clearance that would be directly impacted by OSHA's proposed heat injury and illness standard. We provide services to a wide variety of clients throughout northern New York.

After participating in OSHA's SBREFA panel, Larch has several concerns about OSHA's proposed heat injury and illness prevention standard. Specifically, the regulatory framework includes unsubstantiated heat triggers that are applied generally across the nation despite the unique impact heat has not only by region but also by industry and by individuals. The implementation of this standard would place blanket requirements across employers without appreciating the fact that temperatures are changing hourly, if not by the minute, and that such changes are felt differently across each region. More specifically, a temperature considered high or extreme in Maine or Massachusetts is not hot or extreme in Texas or Florida. It is not clear what data OSHA relies upon in determining these heat triggers, and it is not clear how (if at all) the metrics account for the varying impact they will have based upon region of the country and makeup of the individual employees.

Second, OSHA's regulatory framework does not account for the fact that the seemingly constant and complex monitoring would fall on our crew foreman. The regulatory framework creates a moving target of compliance that will be difficult for our foreman to monitor alongside all other safety considerations. Also, the types of heat monitoring OSHA proposes, such as wet-bulb temperature monitoring, would be cost prohibitive for small entities like Larch and will add unnecessary complexities for our foreman to handle.

Third, OSHA lists exempting emergency response work from coverage under the standard as an option. Larch supports this option, but notes that storm work critical to restoring power must be considered an emergency response. Restoring power to hospitals, nursing homes, schools and homes (among other locations) is critical to keeping people safe. OSHA must make it clear that storm work to restore power is emergency work not subject to the standard.

Finally, much of the regulatory framework focuses on employer's incorporation of breaks, the increase of breaks based upon temperature changes, and where those breaks are taken. This does not account for how such requirements would impact current collective bargaining agreements or whether informal breaks that occur when employees are traveling between job sites, conducting job briefings, or engaging in other non-stressful work activities will be considered by OSHA to constitute breaks.

Based on these considerations, discussed in more detail below, Larch recommends that OSHA reconsider issuing a nationwide heat standard.

I. OSHA's Proposed Heat Triggers Are Unsubstantiated and Fails to Account for Changes by Region and by Employee

OSHA's regulatory framework includes the below "Proposed Temperature Table" that outlines a variety of triggers. We have three main concerns specific to the Proposed Temperature Table: (1) the data supporting the heat trigger temperatures themselves, (2) the ability for our on-site staff to interpret and apply its data, and (3) proposed acclimatization across these varying temperatures.

	Initial Heat Trigger			High-Heat Trigger		
	Ambient	Heat Index	WBGT	Ambient	Heat Index	WBGT
When using a forecast	78°F or higher	76°F or higher	N/A	86°F or higher	83°F or higher	N/A
When measuring on-site	82°F or higher	80°F or higher	ACGIH AL or NIOSH RAL	90°F or higher	87°F or higher	ACGIH TLV or NIOSH

Heat Trigger Data

As far as the data itself, Larch is concerned about what OSHA's basis is for the heat trigger temperatures in the Proposed Temperature Table. During the SBREFA panel I attended where many other SERs raised the same concern, there was a brief mention that OSHA did have some data to support these proposed heat triggers that could be released if necessary. We think it is extremely important for OSHA to release whatever data they are relying upon in reaching these temperatures – especially if these are based upon signs of heat related illness. The ability of small businesses to understand what data OSHA uses to support the occurrence of heat related illnesses at these temperatures will allow employers to better understand how a proposed heat standard might be applied.

Heat Trigger Application

Additionally, if Larch will be relying on this Proposed Temperature Table, then it will require the foremen on site to be responsible for its implementation. Foreman are equipped to handle changes on job sites related to the scope of assignments. However, this potential standard will be asking foremen to also apply constant changing temperatures within this Proposed Temperature Table and doing so will pose several issues. For example, it is not clear how OSHA proposes employers handle instances when a forecast has a high of 76°f at noon with temperatures before and after that falling at 70°f. OSHA's rulemaking framework sets out requirements for employers once these heat triggers are reached with the stated focus to protect employees from heat related injuries they can suffer at those temperatures. However, based on that premise, the potential for any such heat illness would be eliminated once the temperature shifts out of OSHA's identified heat triggers. OSHA's heat standard would need to specifically identify how employers would handle this shift in and out of its heat triggers.

In addition to clarity on compliance with shifting temperatures, OSHA's regulatory framework includes many terms that are not clearly defined or are vague about how OSHA plans

to apply them under the standard. For example, OSHA has indicated that there are various options on how they plan to define a "heat wave" or a "heat related injury or illness." However, it is not clear how any proposed definition of a "heat wave" would work alongside OSHA's Proposed Temperature Table. As I understood the discussion from the SBREFA panel, either proposed definition of a "heat wave" would already be included within the temperatures outset in the Proposed Temperature Table. This inconsistency is the exact reason it will be difficult for our foremen to apply these potential standards in the field.

Heat Trigger Acclimatization

Larch also submits that the acclimatization provision of OSHA's rulemaking framework presents many areas of concern.

First, employees in warmer climates are naturally acclimatized whereas those in cooler climates may not be. Our team mainly works across New York where northeastern temperatures do not present the same consistent heat as areas in Florida or Texas. It simply does not make sense that tree trimmers such as Larch as well as tree trimmers in Dallas, Texas use the same heat triggers in the Proposed Temperature Table for acclimatization. Since these crews will acclimatize differently by region, then it would not make sense for OSHA to implement a standard including acclimatization requirements that do not acknowledge those regional differences.

Also, unlike other industries, the nature of tree/line-clearance work provides for natural acclimatization. Instead of completing the same task for 8 hours straight, employees (new and old) may spend some time in the shade participating in a job briefing, time in the shade holding a traffic sign, time dragging brush, time in a tree trimming in shaded conditions, and some time riding in the air conditioned truck to/from the meet up point or on the way to the next job. Employees also spend time working in sunlight in non-strenuous activities. This variety of tasks makes OSHA's proposed gradual acclimatization a bad option that will not work in practice. Gradual acclimatization is not financially or technologically feasible. The cost of hiring additional workers to account for the work lost during gradual acclimatization would be severe for a small business like Larch and it is not feasible to administer or track it. Specifically what would happen if there is a heat wave on Monday and Tuesday, it cools down Wednesday and Thursday, and there is another heat wave on Friday? This would require employers to be constantly acclimatizing entire crews for huge parts of the summer thereby creating unbearable costs on small businesses. Therefore, employers in the tree/line-clearance industry should be given credit for the natural acclimatization that occurs on site and OSHA should avoid including the gradual acclimatization in its proposed rule.

As to the final point of acclimatization, OSHA should consider the fact that personal medical conditions (medications, obesity, age, alcohol use) have a large effect on a person's ability to acclimatize to heat. OSHA should recognize in the final rule that no matter how good an employer's program is, someone is likely to have a heat illness. Regardless of how robust an employer's HIIP program is or how effectively it's implemented, employees will experience heat related illness. For example, an employee who might have over indulged on alcohol the night before a shift is at risk of suffering remaining dehydrated and suffering heat illness despite Larch's compliance with its heat illness program. As a result, Larch asks that OSHA state explicitly that

factors specific to individual employees such as medications, obesity, age, alcohol use can cause heat illness despite an employer's compliance with the heat standard.

II. OSHA's Standard Should Not Require Complex Equipment and Should Allow Employers Broad Timing and Methods of Testing

Larch is also concerned about the complex and overwhelming data maintenance and testing OSHA's regulatory framework suggests. Specifically, we are concerned that it does not account for the fact that the seemingly constant monitoring would fall directly on our crew foreman, who are non-management and would be on the ground to apply any heat testing. If OSHA makes the proposed methods of testing a requirement, then it would also mean that Larch would have to incur additional costs in the form of purchasing equipment and additional training in order to complete suggested testing. Specifically, by having wet bulb globe temperature as a heat monitoring requirement suggested by OSHA presents several issues. By having this as a requirement, it will be cost prohibitive for small entities like Larch.

In addition to our concerns on the suggested equipment for heat measuring, the timing of testing for these foreman to complete is unclear. For example, the regulatory framework states that when employers are relying on on-site monitoring, OSHA is considering requiring that controls be implemented "only for the hours of the day when the monitored heat index or ambient temperature is at or above the heat triggers." What will this mean in terms of how often the employer has to monitor? As discussed above, these temperatures can fluctuate frequently in and out of OSHA's suggested heat triggers. Requiring our foreman to complete hourly monitoring to account for those changes will be costly to our ability to complete jobs on time and with our current staff.

OSHA appears to lower the requirements for constant monitoring as the regulatory framework states OSHA is considering "permitting an employer to assume that a work area meets or exceeds both heat triggers (Table 1) instead of tracking forecasts or conducting onsite monitoring." However, even if OSHA allows for this assumption, we strongly suggest that OSHA explicitly note in any proposed standard how often an employer would be required to monitor and specifically when employers nay assume heat triggers are met without testing.

In addition to the foregoing requirements to be placed on our foremen, OSHA states that any employer-developed plan should include heat hazard awareness training before work begins in addition to increased monitoring and communication by supervisor or designee for the first week. We think it is imperative that OSHA recognize that the crew foreman – who is not management – may be responsible for monitoring, awareness training, and communication. This should be expressly permitted in any proposed rule.

III. OSHA's Proposed Break Requirements Are Not Practical

Larch is also concerned about how OSHA's proposed rule will incorporate break requirements. The regulatory framework discusses a variety of break increases based upon temperature changes. This does not include any exception for union agreements. For example

Larch's union said they did not want lunch breaks anymore and instead wanted to finish the day earlier. As a result our Larch crews typically pick up lunch and eat it in their truck on their way to the next job. This is also reflected in our collective bargaining agreement. As a result, Larch suggests that OSHA explain how any such break requirements would impact conflicting requirements in an employer's collective bargaining agreement. OSHA should also explicitly note whether break times would no longer be an issue that the employer and union have to bargain.

In addition to conflicts with our collective bargaining agreements, the break requirements in the regulatory framework do not address whether informal breaks between job sites would be considered as breaks under the heat standard. For example, our crews will be spend time in their air-conditioned trucks traveling between different jobs throughout the day or in the shade completing job briefings where they are not exposed to the sun. OSHA's regulatory framework should include a broad definition as to what is considered a break. This broad definition of break types will be essential to any proposed rule as it is the only way employers will be able handle OSHA's proposed incremental breaks. For example, OSHA indicates it would require that employers would have to increase break frequency based on temperature increase. However, it is not clear how much these breaks would have to increase based on temperature. Every five degrees? 10 degrees? The break variance is not only difficult to track, but it again fails to recognize that the situation is different in New York where our crews work than it is in Texas.

IV. Other Comments

- **Emergency Exemption**

OSHA has noted that emergency operations such as those already covered under 29 CFR 1910.156 or 29 CFR 1910.120 will be exempted from these requirements. If OSHA intends to ensure employees working in emergencies are exempted, then OSHA should also exempt storm work completed by our crews to restore power. Just like emergency/fire responses at industrial worksites, a failure to restore the power grid can have significant consequences such as a loss of power at hospitals, nursing homes, correctional facilities, and similar facilities. OSHA's proposal could have a severe effect on the ability to restore power if an exemption is not included.

- **Cooling Equipment**

The rulemaking framework indicates that OSHA might require employers to evaluate the potential use of cooling PPE (such as cooling vests and wetted garments). Does OSHA have evidence that these specific types of PPE are effective to prevent heat related illness? If so, Larch would ask that OSHA provide the data supporting any PPE that would be required.

Additionally, the rulemaking framework proposes restrictions for use of air conditioning and other cooling mechanisms in cabs of vehicles (e.g., delivery trucks). Specifically, OSHA appears to propose that only where temperatures are regularly above the high-heat triggers could these types of cooling mechanisms be used. It is not clear if OSHA is taking the position that air conditioned trucks could only be used as a cool down area when the high heat triggers are met or if the employees spend most of their time in the car. As our Larch crews regularly take breaks in

their trucks, the exclusion of this option would present Larch with significant issues. And OSHA provides no clear reason as to why taking a break in an air-conditioned truck should not be permitted.

OSHA also proposes additional administrative control options such as altering work schedules to complete work outside of the typical workday or season. However, due to the type of work our crews complete, Larch would not be able to implement these same schedule changes. For example, noise ordinances would prevent Larch crews from working early or late in residential neighborhoods.

Larch has worked closely with its employees to understand which cooling mechanisms work best for them on a case by case basis. These proposed cooling mechanisms from OSHA should be listed as optional so as to allow employers to work directly with their employees to identify what works best for them,

- **Training**

OSHA also suggests that any heat illness program should include training on identifying if an employee exhibits symptoms of heat illness and what steps should be taken. OSHA should consider that if an employer trains employees to provide first aid to treat signs of heat illness whether those employees will have to be included in a bloodborne pathogens programs as well. If so, then this will place a significant regulatory burden on employers.

- **Multi-Employer Sites**

In the case of multi-employer worksites, OSHA proposes that host employers could be required to include a description of procedures to protect all employees on-site (e.g., contractors, vendors, staffing agencies, and licensed independent practitioners with privileges) from heat-related hazards. Our team does extensive work with utility companies. A requirement such as this would mean that utilities are going to dictate the heat policies of contractors who work outdoors every day. This is incompatible with OSHA's intention to have employers work closely with their employees in creating a heat injury and illness program that works for them. This could pose issues where Larch's crew would be responsible for heat monitoring and data collection, but would be held to the break and acclimatization requirements of the utility.

- **Recordkeeping**

OSHA indicates that this standard could require employers to maintain any or all of the following records:

- Environmental monitoring data (maintained for a certain period of time)
- A record of any heat-related illness or injury (including those that only require first aid) and the environmental and work conditions at the time of the illness or injury
- An accurate record of all heat acclimatization for new and returning employees

Maintaining these types of records will result in a massive amount of data in southern/western environments. In the event we ever needed to look back at historical heat data, our teams would have access to different online websites that would provide this information in a cost effective way. Also, if the employer is constantly acclimatizing because of constant heat waves during the summer, this will require employers to maintain huge amounts of data.

Overall, we appreciate the opportunity to participate and provide comments on OSHA's proposals for a potential heat standard. Please feel free to contact me with any questions.

Documents submitted to OSHA by SERs that were added to the docket that are not included in Appendix C

Name	Number of Pages	Submitted By
CJH Co Heat Stress Plan v6.15.22 Cover Letter.docx	1	C. Jay Hansen
CJH Heat Illness Prevention Daily PreTask Plan.docx	3	C. Jay Hansen
CJH Heat Illness Prevention Plan & Quiz.docx	11	C. Jay Hansen
CJH Heat Illness Prevention Training.pptx	30	C. Jay Hansen
Copy of Heat Index AQI Daily Data.xlsx	1	C. Jay Hansen
CPWR_Hot_Weather_CPWRlogo_2.pdf	2	C. Jay Hansen
Extreme-Heat-and-Construction-Falls-infographic.pdf	1	C. Jay Hansen
fy16_heat-related-illness-poster_2016-151.pdf	1	C. Jay Hansen
Heat Icon.png	1	C. Jay Hansen
Heat Illness Prevention Quiz Answer Key_2022_Final.docx	1	C. Jay Hansen
Heat_Illness_Medical_Emergency_Instagram_English.png	1	C. Jay Hansen
Heat_Illness_Medical_Emergency_Twitter_English.png	1	C. Jay Hansen
Heat_Illness_Prevention_Instagram_English.png	1	C. Jay Hansen
Heat_Illness_Prevention_Twitter_English.png	1	C. Jay Hansen
Heat_Illness_Signs_Symptoms_Twitter_English.png	1	C. Jay Hansen
HeatStress.mp3	mp3	C. Jay Hansen
Hot-Weather-Hazard-Alert.pdf	1	C. Jay Hansen
Lightning-Hazard-Alert.pdf	1	C. Jay Hansen
NIOSH Fast Facts.pdf	2	C. Jay Hansen
publications_TT-Lightning.pdf	2	C. Jay Hansen
publications_TT-Skin-Cancer.pdf	2	C. Jay Hansen
research-working-hot-weather-heat-safety-infographic.pdf	1	C. Jay Hansen
research-working-hot-weather-tip-1-know-the-signs-heat-infographic.pdf	1	C. Jay Hansen
research-working-hot-weather-tip-2-drink-water-take-breaks-heat-infographic.pdf	1	C. Jay Hansen
research-working-hot-weather-tip-3-seek-medical-assistance-heat-infographic.pdf	1	C. Jay Hansen
research-working-hot-weather-tip-4-dress-appropriately-heat-infographic.pdf	1	C. Jay Hansen
Screenshot of Company Wide Dayly Heat Alert email.jpg	1	C. Jay Hansen
Skin-Cancer-Hazard-Alert.pdf	1	C. Jay Hansen
SMOHIT Heat Stress Presentation 070623.pptx	39	C. Jay Hansen
Chapter - 58 Heat Illness Prevention Program (003).pdf	6	A. Paulette

Appendix D

Poll Question Results from SBREFA Teleconferences

Appendix D
Poll Question Results

Question 1 **What topics are you most interested in discussing during today's SBAR Panel teleconference [choose two]**

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Best practices for administrative controls	-	-	-	-	1	6.7%	-	-	-	-	-	-	1	6.7%
Best practices for engineering controls	-	-	-	-	2	13.3%	-	-	-	-	-	-	2	13.3%
Communication on Multi-Employer Worksites	-	-	-	-	0	20.0%	-	-	-	-	-	-	0	20.0%
Heat hazard identification and assessment	-	-	-	-	3	26.7%	-	-	-	-	-	-	3	26.7%
Heat injury and illness prevention plans	-	-	-	-	4	13.3%	-	-	-	-	-	-	4	13.3%
Impact of personal protective equipment (PPE)	-	-	-	-	2	6.7%	-	-	-	-	-	-	2	6.7%
Medical treatment and heat-related emergency response procedures	-	-	-	-	0	13.3%	-	-	-	-	-	-	0	13.3%
Other	-	-	-	-	1	26.7%	-	-	-	-	-	-	1	26.7%
Provisions for unacclimatized workers	-	-	-	-	2	13.3%	-	-	-	-	-	-	2	13.3%
Recordkeeping	-	-	-	-	4	46.7%	-	-	-	-	-	-	4	46.7%
Rest breaks	-	-	-	-	2	6.7%	-	-	-	-	-	-	2	6.7%
Scope of potential standard	-	-	-	-	7	6.7%	-	-	-	-	-	-	7	6.7%
Training	-	-	-	-	1	0.0%	-	-	-	-	-	-	1	0.0%
Water Provision	-	-	-	-	0	0.0%	-	-	-	-	-	-	0	0.0%

(a) Sum of responses from all sessions where question was asked.
- indicates that the question was not asked during session.
Note: Due to multiple responses from each respondent and rounding, percentages may not sum to 100 percent.

Question 2 **What type of heat-related injuries and illnesses have employees at your workplace experienced? (Check all that apply)**

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
First aid only	-	-	8	57.1%	-	-	-	-	-	-	-	-	8	57.1%
Required more than first aid but no lost work time	-	-	3	21.4%	-	-	-	-	-	-	-	-	3	21.4%
Required more than first aid and missed days away from work	-	-	0	0.0%	-	-	-	-	-	-	-	-	0	0.0%
Fatal	-	-	0	0.0%	-	-	-	-	-	-	-	-	0	0.0%
None	-	-	6	42.9%	-	-	-	-	-	-	-	-	6	42.9%

(a) Sum of responses from all sessions where question was asked.
- indicates that the question was not asked during session.
Note: Due to multiple responses from each respondent and rounding, percentages may not sum to 100 percent.

Question 3 **Are you familiar with the symptoms of heat-related injury or illness?**

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Yes	-	-	14	100.0%	-	-	-	-	-	-	-	-	14	100.0%
No	-	-	0	0.0%	-	-	-	-	-	-	-	-	0	0.0%

(a) Sum of responses from all sessions where question was asked.
- indicates that the question was not asked during session.

Appendix D
Poll Question Results

Question 4 **Do you have an existing Heat Injury and Illness Prevention Program (HIIPP)?**

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Yes	-	-	-	-	-	-	-	-	14	100.0%	-	-	14	100.0%
No	-	-	-	-	-	-	-	-	0	0.0%	-	-	0	0.0%

(a) Sum of responses from all sessions where question was asked.
- indicates that the question was not asked during session.

Question 5 **How often do you think that a Heat Injury and Illness Prevention Program (HIIPP) needs to be reviewed and updated? (Check all that apply)**

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Annually	-	-	-	-	-	-	-	-	12	80.0%	-	-	12	80.0%
Every 6 months	-	-	-	-	-	-	-	-	1	6.7%	-	-	1	6.7%
Every three years	-	-	-	-	-	-	-	-	2	13.3%	-	-	2	13.3%
Every two years	-	-	-	-	-	-	-	-	1	6.7%	-	-	1	6.7%
Other	-	-	-	-	-	-	-	-	1	6.7%	-	-	1	6.7%
Whenever a heat-related injury or illness occurs	-	-	-	-	-	-	-	-	10	66.7%	-	-	10	66.7%

(a) Sum of responses from all sessions where question was asked.
- indicates that the question was not asked during session.
Note: Due to multiple responses from each respondent and rounding, percentages may not sum to 100 percent.

Question 6 **How often do you conduct heat hazard assessments at your workplace? (Check all that apply)**

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Annually	-	-	1	7.7%	-	-	-	-	-	-	-	-	1	7.7%
Never	-	-	1	7.7%	-	-	-	-	-	-	-	-	1	7.7%
One-time	-	-	2	15.4%	-	-	-	-	-	-	-	-	2	15.4%
Whenever conditions change	-	-	10	76.9%	-	-	-	-	-	-	-	-	10	76.9%

(a) Sum of responses from all sessions where question was asked.
- indicates that the question was not asked during session.
Note: Due to multiple responses from each respondent and rounding, percentages may not sum to 100 percent.

Appendix D
Poll Question Results

Question 7 **Which of the following tools do you use to monitor heat at your work site? (Check all that apply)**

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Heat index monitors	2	18.2%	2	15.4%	-	-	-	-	-	-	-	-	4	16.7%
Heat is not currently monitored at the work site	3	27.3%	1	7.7%	-	-	-	-	-	-	-	-	4	16.7%
Local weather forecasts	6	54.5%	10	76.9%	-	-	-	-	-	-	-	-	16	66.7%
NIOSH OSHA Heat Safety app	2	18.2%	4	30.8%	-	-	-	-	-	-	-	-	6	25.0%
National Weather Service's online calculator	3	27.3%	2	15.4%	-	-	-	-	-	-	-	-	5	20.8%
Other	1	9.1%	1	7.7%	-	-	-	-	-	-	-	-	2	8.3%
Standard thermometers	2	18.2%	3	23.1%	-	-	-	-	-	-	-	-	5	20.8%
Wet bulb globe thermometers	0	0.0%	1	7.7%	-	-	-	-	-	-	-	-	1	4.2%

(a) Sum of responses from all sessions where question was asked.

- indicates that the question was not asked during session.

Note: Due to multiple responses from each respondent and rounding, percentages may not sum to 100 percent.

Question 8 **If you currently do not monitor heat at your work site, which of the following methods are you most likely to adopt if the heat standard requires hazard identification and assessment? (Check all that apply)**

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Measuring ambient temperature	1	14.3%	1	12.5%	-	-	-	-	-	-	-	-	2	13.3%
Measuring heat index	2	28.6%	3	37.5%	-	-	-	-	-	-	-	-	5	33.3%
Measuring wet bulb globe temperature	0	0.0%	1	12.5%	-	-	-	-	-	-	-	-	1	6.7%
Other	4	57.1%	4	50.0%	-	-	-	-	-	-	-	-	8	53.3%
Tracking local weather forecasts	5	71.4%	4	50.0%	-	-	-	-	-	-	-	-	9	60.0%
Using the NIOSH OSHA Heat Safety app or National Weather Service's online calculator to compute heat index	0	0.0%	0	0.0%	-	-	-	-	-	-	-	-	0	0.0%

(a) Sum of responses from all sessions where question was asked.

- indicates that the question was not asked during session.

Note: Due to multiple responses from each respondent and rounding, percentages may not sum to 100 percent.

Appendix D
Poll Question Results

Question 9

What types of engineering controls do you utilize at the workplace to mitigate the impact of heat exposure to employees that work outdoors? (Check all that apply)

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Air-Conditioned Space	-	-	8	66.7%	6	75.0%	-	-	-	-	6	60.0%	20	66.7%
Artificial Shade	-	-	5	41.7%	7	87.5%	-	-	-	-	5	50.0%	17	56.7%
Cooling or Misting Fans	-	-	7	58.3%	2	25.0%	-	-	-	-	6	60.0%	15	50.0%
Natural Shade	-	-	4	33.3%	6	75.0%	-	-	-	-	8	80.0%	18	60.0%
None	-	-	1	8.3%	0	0.0%	-	-	-	-	0	0.0%	1	3.3%
Other	-	-	3	25.0%	2	25.0%	-	-	-	-	3	30.0%	8	26.7%

(a) Sum of responses from all sessions where question was asked.

- indicates that the question was not asked during session.

Note: Due to multiple responses from each respondent and rounding, percentages may not sum to 100 percent.

Question 10

What type of engineering controls do you utilize at the workplace to mitigate the impact of heat exposure to employees that work indoors? (Check all that apply)

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Cooled Break Rooms	-	-	9	64.3%	5	41.7%	-	-	-	-	5	55.6%	19	54.3%
Cooled workstations (air conditioning)	-	-	4	28.6%	8	66.7%	-	-	-	-	5	55.6%	17	48.6%
Cooled workstations (fans)	-	-	12	85.7%	8	66.7%	-	-	-	-	2	22.2%	22	62.9%
None	-	-	0	0.0%	0	0.0%	-	-	-	-	1	11.1%	1	2.9%
Other	-	-	2	14.3%	1	8.3%	-	-	-	-	2	22.2%	5	14.3%

(a) Sum of responses from all sessions where question was asked.

- indicates that the question was not asked during session.

Note: Due to multiple responses from each respondent and rounding, percentages may not sum to 100 percent.

Question 12

Are any of your employees exposed to process heat or heat generated by equipment as part of their typical work duties?

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Yes	-	-	6	42.9%	-	-	-	-	-	-	-	-	6	42.9%
No	-	-	8	57.1%	-	-	-	-	-	-	-	-	8	57.1%

(a) Sum of responses from all sessions where question was asked.

- indicates that the question was not asked during session.

Appendix D
Poll Question Results

Question 13 **How are you currently providing water to employees? (Check all that apply)**

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Water bottles	-	-	-	-	9	75.0%	-	-	-	-	-	-	9	75.0%
Water coolers	-	-	-	-	6	50.0%	-	-	-	-	-	-	6	50.0%
Water fountain(s)	-	-	-	-	2	16.7%	-	-	-	-	-	-	2	16.7%
Water tap	-	-	-	-	3	25.0%	-	-	-	-	-	-	3	25.0%
Other	-	-	-	-	2	16.7%	-	-	-	-	-	-	2	16.7%
I don't provide water	-	-	-	-	0	0.0%	-	-	-	-	-	-	0	0.0%

(a) Sum of responses from all sessions where question was asked.
- indicates that the question was not asked during session.
Note: Due to multiple responses from each respondent and rounding, percentages may not sum to 100 percent.

Question 14 **Do you currently keep your water at a certain temperature or temperature range?**

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Yes	-	-	-	-	2	22.2%	-	-	-	-	-	-	2	22.2%
No	-	-	-	-	7	77.8%	-	-	-	-	-	-	7	77.8%
Unknown	-	-	-	-	0	0.0%	-	-	-	-	-	-	0	0.0%

(a) Sum of responses from all sessions where question was asked.
- indicates that the question was not asked during session.

Question 15 **Is water available and easily accessible to all workers?**

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Yes	-	-	-	-	8	100.0%	-	-	-	-	-	-	8	100.0%
None	-	-	-	-	0	0.0%	-	-	-	-	-	-	0	0.0%
Water is available and accessible to some but not all workers	-	-	-	-	0	0.0%	-	-	-	-	-	-	0	0.0%

(a) Sum of responses from all sessions where question was asked.
- indicates that the question was not asked during session.

Appendix D
Poll Question Results

Question 16

Do you provide heat acclimatization for new and returning workers? Returning workers may be those returning from leave, an extended vacation, or a position where they were not exposed to heat.

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Neither	7	50.0%	6	42.9%	7	58.3%	3	30.0%	-	-	3	37.5%	26	44.8%
Only for new	3	21.4%	3	21.4%	2	16.7%	2	20.0%	-	-	3	37.5%	13	22.4%
Yes, for both new and returning	4	28.6%	5	35.7%	3	25.0%	5	50.0%	-	-	2	25.0%	19	32.8%

(a) Sum of responses from all sessions where question was asked.
- indicates that the question was not asked during session.

Question 17

What types of protections do you currently utilize for unacclimatized workers? (Check all that apply)

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Gradual increase of exposure to heat	4	26.7%	4	30.8%	3	27.3%	2	20.0%	-	-	2	40.0%	15	27.8%
Heat hazard awareness training	12	80.0%	10	76.9%	6	54.5%	6	60.0%	-	-	3	60.0%	37	68.5%
Increased monitoring and communication	10	66.7%	10	76.9%	6	54.5%	7	70.0%	-	-	3	60.0%	36	66.7%
Other	4	26.7%	1	7.7%	2	18.2%	1	10.0%	-	-	0	0.0%	8	14.8%

(a) Sum of responses from all sessions where question was asked.
- indicates that the question was not asked during session.
Note: Due to multiple responses from each respondent and rounding, percentages may not sum to 100 percent.

Question 18

Do you have any acclimatization protocols/plans/schedules for sudden increases in temperature and/or heat waves?

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Yes	-	-	2	66.7%	4	33.3%	9	90.0%	-	-	-	-	15	60.0%
No	-	-	1	33.3%	8	66.7%	1	10.0%	-	-	-	-	10	40.0%

(a) Sum of responses from all sessions where question was asked.
- indicates that the question was not asked during session.

Question 19

Do you provide meal breaks to your employees?

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
All employees	12	92.3%	11	100.0%	10	100.0%	13	100.0%	-	-	10	100.0%	56	98.2%
No employees	1	7.7%	0	0.0%	0	0.0%	0	0.0%	-	-	0	0.0%	1	1.8%
Some employees	0	0.0%	0	0.0%	0	0.0%	0	0.0%	-	-	0	0.0%	0	0.0%

(a) Sum of responses from all sessions where question was asked.
- indicates that the question was not asked during session.

Appendix D
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Question 20 **Are these meal breaks considered paid or unpaid time?**

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
No meal breaks offered	1	12.5%	0	0.0%	0	0.0%	0	0.0%	-	-	0	0.0%	1	1.9%
Paid	1	12.5%	6	50.0%	6	54.5%	4	30.8%	-	-	4	40.0%	21	38.9%
Unpaid	6	75.0%	6	50.0%	5	45.5%	9	69.2%	-	-	6	60.0%	32	59.3%

(a) Sum of responses from all sessions where question was asked.
- indicates that the question was not asked during session.

Question 21 **Do you allow employees to take breaks? Note: We are asking about any break other than a "meal break", which typically lasts 30 minutes and is not required to be paid.**

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
All employees	8	88.9%	9	81.8%	10	90.9%	9	69.2%	-	-	-	-	36	81.8%
No employees	0	0.0%	1	9.1%	1	9.1%	4	30.8%	-	-	-	-	6	13.6%
Some employees	1	11.1%	1	9.1%	0	0.0%	0	0.0%	-	-	-	-	2	4.5%

(a) Sum of responses from all sessions where question was asked.
- indicates that the question was not asked during session.

Question 22 **Are breaks that are not a "meal break" considered paid or unpaid time?**

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Paid	13	92.9%	11	100.0%	9	90.0%	13	100.0%	-	-	-	-	46	95.8%
Unpaid	1	7.1%	0	0.0%	1	10.0%	0	0.0%	-	-	-	-	2	4.2%
No breaks offered	0	0.0%	0	0.0%	0	0.0%	0	0.0%	-	-	-	-	0	0.0%

(a) Sum of responses from all sessions where question was asked.
- indicates that the question was not asked during session.

Question 23 **Do you (the employer) decide how long/often the breaks can be, or can employees take breaks when they need to?**

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Employee decides	6	37.5%	9	69.2%	6	54.5%	6	46.2%	-	-	-	-	27	50.9%
Employer decides	3	18.8%	0	0.0%	2	18.2%	0	0.0%	-	-	-	-	5	9.4%
It depends	7	43.8%	4	30.8%	3	27.3%	7	53.8%	-	-	-	-	21	39.6%
No breaks offered	0	0.0%	0	0.0%	0	0.0%	0	0.0%	-	-	-	-	0	0.0%

(a) Sum of responses from all sessions where question was asked.
- indicates that the question was not asked during session.

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Poll Question Results

Question 24 **Do you currently have policies and procedures in place aimed at identifying signs and symptoms of heat-related injury and illness among**

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Employee buddy system	-	-	-	-	-	-	5	35.7%	-	-	-	-	5	35.7%
No	-	-	-	-	-	-	3	21.4%	-	-	-	-	3	21.4%
Supervision/observation by supervisor or other designated person	-	-	-	-	-	-	6	42.9%	-	-	-	-	6	42.9%
Other	-	-	-	-	-	-	0	0.0%	-	-	-	-	0	0.0%

(a) Sum of responses from all sessions where question was asked.
- indicates that the question was not asked during session.

Question 27 **What types of personal protective equipment (PPE) or clothing do your employees wear (Check all that apply)?**

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Boots	-	-	-	-	-	-	-	-	12	85.7%	-	-	12	85.7%
Coveralls	-	-	-	-	-	-	-	-	6	42.9%	-	-	6	42.9%
Face shields	-	-	-	-	-	-	-	-	7	50.0%	-	-	7	50.0%
Gloves	-	-	-	-	-	-	-	-	12	85.7%	-	-	12	85.7%
None	-	-	-	-	-	-	-	-	1	7.1%	-	-	1	7.1%
Other	-	-	-	-	-	-	-	-	10	71.4%	-	-	10	71.4%
Respirator	-	-	-	-	-	-	-	-	5	35.7%	-	-	5	35.7%
Surgical gowns	-	-	-	-	-	-	-	-	1	7.1%	-	-	1	7.1%
Waterproof aprons	-	-	-	-	-	-	-	-	2	14.3%	-	-	2	14.3%

(a) Sum of responses from all sessions where question was asked.
- indicates that the question was not asked during session.
Note: Due to multiple responses from each respondent and rounding, percentages may not sum to 100 percent.

Question 28 **If employees wear personal protective equipment (PPE) or clothing that contributes to heat stress, do you have procedures in place to attempt to mitigate heat exposure for those employees?**

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Yes	-	-	-	-	-	-	-	-	12	92.3%	-	-	12	92.3%
No	-	-	-	-	-	-	-	-	1	7.7%	-	-	1	7.7%

(a) Sum of responses from all sessions where question was asked.
- indicates that the question was not asked during session.

Appendix D
Poll Question Results

Question 29 **Do your employees wear any cooling personal protective equipment (PPE) (e.g., cooling vests, wetted garments)?**

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Yes	-	-	-	-	-	-	-	-	6	42.9%	-	-	6	42.9%
No	-	-	-	-	-	-	-	-	8	57.1%	-	-	8	57.1%

(a) Sum of responses from all sessions where question was asked.
- indicates that the question was not asked during session.

Question 32 **How do you currently send notifications to workers? (Check all that apply)**

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Do not currently send any notifications	-	-	-	-	1	9.1%	-	-	-	-	-	-	1	9.1%
Individual text messages or phone calls	-	-	-	-	6	54.5%	-	-	-	-	-	-	6	54.5%
Mass alert system	-	-	-	-	4	36.4%	-	-	-	-	-	-	4	36.4%
Other	-	-	-	-	5	45.5%	-	-	-	-	-	-	5	45.5%
Phone trees	-	-	-	-	1	9.1%	-	-	-	-	-	-	1	9.1%

(a) Sum of responses from all sessions where question was asked.
- indicates that the question was not asked during session.
Note: Due to multiple responses from each respondent and rounding, percentages may not sum to 100 percent.

Question 33 **Do any of your injury and illness prevention programs/plans (not just heat-related) include emergency response procedures?**

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Yes	-	-	-	-	10	83.3%	-	-	-	-	-	-	10	83.3%
No	-	-	-	-	0	0.0%	-	-	-	-	-	-	0	0.0%
No current injury and illness prevention program/plan	-	-	-	-	2	16.7%	-	-	-	-	-	-	2	16.7%

(a) Sum of responses from all sessions where question was asked.
- indicates that the question was not asked during session.

Appendix D
Poll Question Results

Question 34 **How often do you conduct heat safety trainings with employees? (Check all that apply)**

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
After heat-related incident occurs	-	-	-	-	-	-	-	-	3	20.0%	-	-	3	20.0%
Annually	-	-	-	-	-	-	-	-	13	86.7%	-	-	13	86.7%
Before heat season	-	-	-	-	-	-	-	-	13	86.7%	-	-	13	86.7%
Other	-	-	-	-	-	-	-	-	3	20.0%	-	-	3	20.0%
Never	-	-	-	-	-	-	-	-	0	0.0%	-	-	0	0.0%
Upon hiring	-	-	-	-	-	-	-	-	12	80.0%	-	-	12	80.0%

(a) Sum of responses from all sessions where question was asked.
- indicates that the question was not asked during session.
Note: Due to multiple responses from each respondent and rounding, percentages may not sum to 100 percent.

Question 35 **Do you provide additional heat safety training for supervisors?**

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Yes	-	-	-	-	-	-	-	-	3	21.4%	-	-	3	21.4%
No – same training for supervisors and non-supervisors	-	-	-	-	-	-	-	-	11	78.6%	-	-	11	78.6%
No - no training	-	-	-	-	-	-	-	-	0	0.0%	-	-	0	0.0%

(a) Sum of responses from all sessions where question was asked.
- indicates that the question was not asked during session.

Question 36 **How often do you record and maintain records on the heat conditions at your workplace?**

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Daily	-	-	1	7.1%	-	-	-	-	-	-	-	-	1	7.1%
Never	-	-	9	64.3%	-	-	-	-	-	-	-	-	9	64.3%
Other	-	-	0	0.0%	-	-	-	-	-	-	-	-	0	0.0%
When temperatures exceed a heat trigger	-	-	4	28.6%	-	-	-	-	-	-	-	-	4	28.6%
When a heat related incident occurs	-	-	0	0.0%	-	-	-	-	-	-	-	-	0	0.0%
Other	-	-	0	0.0%	-	-	-	-	-	-	-	-	0	0.0%

(a) Sum of responses from all sessions where question was asked.
- indicates that the question was not asked during session.

Appendix D
Poll Question Results

Question 37 **Do you currently create records on heat-related injuries and illnesses that only require first aid?**

	9/7/2023 Session		9/12/2023 Session		9/13/2023 Session		9/14/2023 Session		9/18/2023 Session		9/19/2023 Session		All Sessions Combined (a)	
Answer	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
In some cases	-	-	1	7.1%	-	-	-	-	-	-	-	-	1	7.1%
Never	-	-	6	42.9%	-	-	-	-	-	-	-	-	6	42.9%
Yes	-	-	7	50.0%	-	-	-	-	-	-	-	-	7	50.0%

(a) Sum of responses from all sessions where question was asked.

- indicates that the question was not asked during session.

Appendix E

Small Entity Representative Materials: Regulatory Framework, SER Background Document, and List of SBAR Panel Questions

Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings

Regulatory Framework

This document is meant to provide an outline of potential options for the various elements of a proposed rule. OSHA envisions a programmatic standard that could require employers to create a plan to evaluate and control heat hazards in their workplace. The standard could allow for flexibility for employers to customize the plan to their workplace. The standard could also include some elements that set specifications related to heat exposure levels.

In developing this outline, OSHA has identified several options for effective control measures that reflect best practices and guidance. These options are based on the National Institute for Occupational Safety and Health (NIOSH) Criteria for a Recommended Standard (i.e., Criteria Document), existing state standards, and stakeholder comments. This approach is different from past SBREFA panels where OSHA designated a preferred option and alternatives. During SBREFA, the Agency is looking for input from Small Entity Representatives (SERs) on which options would be the least burdensome and most feasible ways for small businesses to adequately protect workers from dangerous heat while achieving OSHA's statutory and regulatory objectives. OSHA will use feedback on these elements and options to develop a rule that is protective, feasible, and as flexible as practical.

Scope and Application

This standard could cover indoor and outdoor work in any/all General Industry, Construction, Maritime, and Agriculture sectors where OSHA has jurisdiction.

OSHA could consider exempting:

- Short duration exposures, such as 15 minutes of work in hazardous heat conditions every 60 minutes
- Emergency operations such as those already covered under 29 CFR 1910.156 or 29 CFR 1910.120 (Note: OSHA is currently engaged in rulemaking on emergency response and there are elements of on scene rehabilitation that address the same issues covered in this standard.)
- Work in spaces where mechanical ventilation keeps working areas below certain conditions (e.g., ambient temperature of 80°F) with possible administrative controls required if the mechanical ventilation is not operable
- Work done from home (e.g., telework, remote, and hybrid employees)
- Sedentary or light activities performed indoors, if these are the only activities performed during the work shift

Heat Injury and Illness Prevention Program

The standard could require that employers create a written Heat Injury and Illness Prevention Program (HIIPP), with the input of employees, and include the following elements:

- Procedures to identify when heat hazards exist for employees, including procedures for environmental monitoring and the identification of work processes and external factors that increase the likelihood of heat-related injury and illness
- Procedures for implementing engineering controls
- Procedures for implementing administrative controls, including the provisions of drinking water, rest breaks in a cool and/or shaded area, acclimatization protocols for new and returning employees, and supervision of employees for signs and symptoms of heat-related illness
- High-heat procedures
- Procedures for when employees are exhibiting symptoms of heat-related illness and emergency response procedures
- Training of employees and supervisors
- Selection of a designated individual(s) to oversee and implement the HIIPP, including environmental monitoring

Exemption: Very small employers (e.g., those with 10 or fewer employees) could receive exemptions from requirements to have a written Heat Injury and Illness Prevention Program.

The standard could require employers to make the HIIPP available at the work site to employees and governmental representatives and to review and update the HIIPP periodically. Options for frequency for reviewing and updating the HIIPP include:

- **Option:** Whenever necessary to ensure its ongoing effectiveness
- **Option:** Whenever a heat-related illness or injury occurs
- **Option**: Annually
- **Option**: Whenever a heat-related illness or injury occurs, but no less than annually

Hazard Identification and Assessment

The standard could require employers to identify if and when heat hazards exist for their employees.

Outdoor Work Sites

For outdoor work sites, the standard could require that employers **monitor weather conditions to determine when there is a heat hazard**. Options could include:

- **Track local forecasts** of ambient temperature and humidity provided by the National Weather Service (or others) to determine daily maximum heat index
    - ***Optional to account for dry climates*:** For low forecasted relative humidity (e.g., below 30%), the employer could rely on ambient temperature alone.

- **Measure work area heat conditions** every day or when local forecasted conditions meet or exceed relevant triggers (see forecast heat triggers in Table 1)
    - **Option:** Employers measure heat index or ambient temperature and humidity to calculate heat index (employers could use the OSHA-NIOSH Heat Safety Tool App as a calculator or the online calculator available from the National Weather Service) at or as close as feasible to the work area at some periodic interval (e.g., hourly)

    - ***Optional to account for dry climates***: For low forecasted relative humidity (e.g., below 30%), the employer could rely on ambient temperature alone.
    - ***Optional for employees in vapor-impermeable PPE*:** Employers could rely on ambient temperature triggers when employees are wearing vapor- impermeable protection.
- **Option**: Employers measure wet bulb globe temperature at or as close as feasible to the work area (i.e., area where one or more employees are working within the work site) at some periodic interval (e.g., hourly)

Exception: OSHA is considering permitting an employer to assume that a work area meets or exceeds both heat triggers (Table 1) instead of tracking forecasts or conducting onsite monitoring. Employers that use this exception would be required to comply with the relevant control measures outlined in this document whenever employees are on site.

Indoor Work Sites

The standard could require employers to conduct a hazard assessment to identify the work areas or processes where there is the potential for employees to be exposed to heat hazards, including a determination of whether and when outdoor heat affects indoor temperature/heat index at the work site. When information gathered during the hazard assessment indicates that any employee's exposure may equal or exceed the initial heat trigger (see Table 1 below), the employer could be required to develop a monitoring program to identify when employees are exposed to heat at or above the relevant triggers. Employers could be required to conduct additional monitoring or a new hazard assessment whenever a change in production, process, equipment, or controls has the potential to increase heat exposure.

Monitoring options could include:

- **Option**: Employers measure heat index or ambient temperature and humidity to calculate heat index (employers could use the OSHA-NIOSH Heat Safety Tool App as a calculator or the online calculator available from the National Weather Service) at or as close as feasible to the work area
    - ***Optional to account for dry work sites***: If the indoor relative humidity is below a certain threshold (e.g., 30%), the employer could rely on ambient temperature alone.
    - ***Optional for employees in vapor-impermeable PPE*:** Employers could rely on ambient temperature triggers when employees are wearing vapor- impermeable protection.
- **Option**: Employers measure wet bulb globe temperature at or as close as feasible to the work area

Exception: OSHA is considering permitting an employer to assume that a work area meets or exceeds both heat triggers (Table 1) instead of monitoring. Employers that use this exception would be required to comply with the relevant control measures outlined in this document whenever employees are on site.

Heat Triggers

The standard could specify that certain control measures be required at a temperature-based “initial heat trigger”. Additional measures (referred to as “high-heat procedures”) could be required at a “high-heat trigger”. Forecasts and onsite monitoring could have different triggers due to the anticipated variability between forecasted conditions and onsite conditions.

Table 1. Options for initial heat trigger and high-heat trigger

	Initial Heat Trigger			High-Heat Trigger		
	Ambient	Heat Index	WBGT	Ambient	Heat Index	WBGT
When using a forecast	78°F or higher	76°F or higher	N/A	86°F or higher	83°F or higher	N/A
When measuring on-site	82°F or higher	80°F or higher	ACGIH AL or NIOSH RAL	90°F or higher	87°F or higher	ACGIH TLV or NIOSH REL

The values in this table represent the minimum value currently being considered.

- When employers are relying on forecasts alone, OSHA is considering requiring controls to be implemented for the whole day when the forecasted daily maximum heat index or ambient temperature is at or above the forecast heat triggers (see Table 1)
- When employers are relying on on-site monitoring, OSHA is considering requiring that controls be implemented only for the hours of the day when the monitored heat index or ambient temperature is at or above the heat triggers (see Table 1)
- Control provisions put in place at or above the high-heat trigger could be referred to as "**high-heat procedures**"
- When employees are required to wear vapor barrier clothing or an additional layer (e.g., coveralls), OSHA is considering requiring "high-heat procedures" be used when temperatures are at or above a specific trigger
- If employers are using wet bulb globe thermometer measurements and the ACGIH or NIOSH approach to calculate the Threshold Limit Value (TLV)/Recommended Exposure Limit (REL) and Action Limit (AL)/Recommended Alert Limit (RAL), OSHA is considering allowing these employers to treat these limits as the high-heat trigger and initial heat trigger, respectively. This would need to be outlined in the employer's HIIPP and any assumptions made in calculating these limits would need to be justified.
- OSHA is considering the following options for the definition of a heat wave:
    - **Option**: When the National Weather Service issues a heat advisory or a heat warning for the local area
    - **Option**: When the daily maximum temperature exceeds 90°F and is 9°F or more above the maximum reached on the preceding days

Hazard Prevention and Control Measures

OSHA is considering requiring some combination of engineering and administrative controls.

Engineering Controls

The standard could require employers to implement engineering controls when the temperature is at or above the initial heat trigger (see Table 1).

OSHA has identified the following possible options for engineering controls for **outdoor** work sites:

- Provision of a **cool-down area**:

- **Option**: Cooling measures (e.g., cooling fans/misting machines), if employer can demonstrate that they are at least as protective as shade
- **Option**: Shade (artificial shade [e.g., tent, pavilion] or natural shade [e.g., trees, but not equipment]) that provides complete blockage of sunlight, is open to the outside air or uses mechanical ventilation for cooling, can accommodate the number of employees on break, and is located as close as practical to the work area
- **Option**: Air-conditioned space (e.g., trailers, vehicles, structures) that can accommodate the number of employees on break, and is located as close as practical to the work area
- **Option**: Any combination of the above controls

OSHA has identified the following possible options for engineering controls for **indoor** work sites:

- Provision of **a cool-down area** (e.g., break room or trailer) that is air-conditioned or has some combination of air movement and humidity control, can accommodate the number of employees on break, and is located as close as practical to the work area

- Provision of **work area controls**:
  - **Option**: Increased air movement (except where it would increase exposure to contaminants). Increased air movement could include fans at individual work areas or the entire work site (when temperature is cool enough) or natural ventilation (e.g., open windows).
  - **Option**: Some combination of increased air movement (except where it would increase exposure to contaminants) and humidity control (depending on temperature and humidity status of work area).
  - **Option**: When feasible, air-conditioned work areas or control booths (if applicable)

- When **fixed heat-generating sources** are present in the work area:
  - When possible, employers could be required to reduce exposure to heat generated by fixed sources of radiant heat. Some possible options could include:
    - Installing local exhaust ventilation at heat-generating sources
    - Shielding or barriers that are radiant-reflecting or heat-absorbing
    - Isolating the source of radiant heat
    - Increasing the distance between employees and the heat source
    - Modifying the hot process or operation
    - Installing waste heat recovery technology
    - Adding thermal insulation on hot surfaces (e.g., steam pipes)

OSHA is considering the following possible options for engineering controls for employer-provided **vehicles**:

- Air conditioning or other cooling mechanisms in cabs of vehicles (e.g., delivery trucks)
  - **Option:** Only where temperatures are regularly above the high-heat trigger (see Table 1)
  - **Option**: Only required when employees spend the majority of their shift working in or from vehicles

Administrative Controls

OSHA has identified the following options for administrative controls:

- There are existing OSHA requirements for employers to provide **drinking water** to employees. OSHA is considering specifying additional requirements for location, temperature, and quantity, such as:
    - Drinking water must be located as close as practical to work areas
    - Drinking water should be suitably cool
    - Employees should have access to 1 quart (32 fluid ounces) of drinking water per employee per hour for the entire shift, provided by the employer (can be refilled throughout the shift)
    - Employees should have ample opportunity to drink water and must be encouraged to frequently consume water or other acceptable beverages
    - Employers are allowed to provide other beverages (e.g., non-caffeinated electrolyte solutions) if they are provided in addition to minimum water requirements, not in place of

- OSHA could consider requiring employers to adopt protections for new and returning employees who may not be **acclimatized** to working in the heat at or above the initial heat trigger. Options could include:
    - **New employees**:
        - **Option:** Employer-developed plan that includes heat hazard awareness training before work begins in addition to increased monitoring and communication by supervisor or designee for the first week
        - **Option:** Employer-developed acclimatization protocol based on the work tasks performed by employees, clothing/personal protective equipment (PPE) worn, and environmental risk factors. The standard could specify a minimum protocol for this option.
        - **Option:** Follow high-heat procedures at the initial heat trigger (see Table 1) for the first week
        - **Option**: Gradual acclimatization to heat:
            - First day – heat exposure restricted to 20 percent of a normal duration
            - Second day – heat exposure restricted to 40 percent of a normal duration
            - Third day – heat exposure restricted to 60 percent of a normal duration
            - Fourth day – heat exposure restricted to 80 percent of a normal duration
            - Fifth day – normal duration of heat exposure
        - ***Exemption***: Newly hired employees who report recently (e.g., in the prior week) performing the same work tasks in similar heat conditions could be exempted
    - **Returning employees who have previous experience with the job but have been away from the job for some period (e.g., 7, 14, or 30 days)**
        - **Option:** Employer-developed plan that includes heat hazard awareness training before work begins in addition to increased monitoring and communication by supervisor or designee for the first week
        - **Option:** Employer-developed acclimatization protocol based on the work tasks performed by employees, clothing/PPE worn, and environmental risk factors. The standard could specify a minimum protocol for this option.
        - **Option:** Follow high-heat procedures at the initial heat trigger (see Table 1) for the first week

        - **Option**: Gradual acclimatization to heat:
            - First day – heat exposure restricted to 50 percent of a normal duration
            - Second day – heat exposure restricted to 60 percent of a normal duration
            - Third day – heat exposure restricted to 80 percent of a normal duration
            - Fourth day – normal duration of heat exposure
    - **During local heat waves:**

        Option: Employers follow the options for returning employees (see above)
- The standard could require the provision of **rest breaks in a cool and/or shaded area**. Options could include:
    - **Location** requirements for rest breaks:
        - **Option**: Near drinking water supplies
        - **Option**: Near drinking water supplies and restroom facilities
    - **At or above the initial heat trigger (see Table 1):**
        - **Option**: Employees are allowed and encouraged to take rest breaks as needed to prevent overheating
        - **Option**: A minimum 10-minute rest break at least every 2 hours
    - **At or above the high-heat trigger (see Table 1):**
        - **Option**: A minimum 15-minute rest break at least every two hours
        - **Option:** Employer-developed rest schedules, with a minimum of 15 minutes every two hours and increasing break duration and/or frequency as temperatures increase
    - For all options above, OSHA is also considering the following:
        - Periods during which employees are donning and doffing PPE (e.g., coveralls) should not count towards the total time provided for rest breaks
        - The time for employees to walk to the cool and/or shaded area is not included in the time provided for rest breaks
        - Employers do not need to pay for rest breaks taken during an unpaid bona fide meal break
- The standard could require the **supervision** of employees for signs and symptoms of heat-related illness. Options could include:
    - **At or above the initial heat trigger (see Table 1)**: employers maintain effective communication with employees by voice, observation, or electronic means (such as a handheld transceiver, phone, or radio) and provide regular communication
    - **At or above the high-heat trigger (see Table 1) or for new or returning workers who may not be acclimatized or during heat waves**:
        - **Option**: Observation of employees for signs and symptoms by coworkers, also called a buddy system (using either visual or verbal communication)
        - **Option:** Observation of employees for signs and symptoms by supervisor, with no more than 20 employees supervised per supervisor or designee

- Additional administrative control options could include:
    - Altering work schedules (i.e., scheduling outside of the typical workday or season)
    - When the high-heat trigger (see Table 1) is met or exceeded, holding a pre-shift meeting or notifying employees of the following:
        - High-heat procedures are in effect
        - Encouraging employees to drink plenty of water

        - Reminding employees of their rights to take rest breaks as needed
        - Location of shade and/or cool-down areas, breaks, and water for mobile work sites
        - Designating employees to call 9-1-1 in a medical emergency
    - In indoor environments, restricting access to excessively high heat areas (e.g., those with ambient temperatures at or above 120°F) by only allowing employees that have been trained to access these areas and placing warning signs outside or near these areas

Personal Protective Equipment (PPE)

- The standard could require that employers consider the contributions of PPE to heat stress. Potential options could include:
    - **Option**: Many forms of PPE for protecting against non-heat hazards may contribute to heat stress. Employers must take this into account in assessing risks to employees posed by heat.
    - **Option**: When employees are required to wear vapor barrier clothing or an additional layer (e.g., protective suits or coveralls), additional precautions (such as high-heat procedures) should be implemented when a specific trigger is met or exceeded

- The standard could require employers to consider heat hazards specific to their work site and evaluate the potential use of cooling PPE (such as cooling vests and wetted garments):
    - Based on the heat hazard assessment, employers should determine whether the use of PPE is necessary to protect employees from the hazards identified
    - Cooling properties of PPE must be maintained at all times during use

Medical Treatment and Heat-Related Emergency Response

The standard could require employers to:

- Have written medical treatment and emergency response procedures, which should include at least the following:
    - Descriptions of how communication is maintained with employees at the work site, so that they can contact a supervisor or emergency medical services (9-1-1) as soon as possible
    - A designated person to ensure that emergency procedures are invoked when appropriate
    - A description of how to transport employees to a place where they can be reached by an emergency medical provider
    - Clear and precise directions to the work site, which can be provided to emergency dispatchers

- Respond to reported or observed signs and symptoms of heat illness. The supervisor must take immediate action appropriate to the severity of the illness.
    - If an employee exhibits symptoms of heat illness, they should be relieved from duty, monitored and not left alone, not sent home without being offered on-site first aid or medical services, and be given the means to reduce their body temperature.
        - For suspected heat stroke, the employer should take immediate actions to reduce the employee's body temperature (e.g., pouring water and ice directly onto the individual, placing them in a cold-water tub). Emergency medical services should be

contacted immediately but affected employees should be cooled down before transport.

Worker Training

The standard could require employers to institute a training program that is provided to supervisors and employees.

- The training program for employees could be required to cover the following topics:
    - Heat stress hazards
    - Different types of heat injury and illness
    - Risk factors for heat injury or illness, including the contributions of physical exertion, clothing, PPE, and a lack of acclimatization, as well as the effects of therapeutic drugs, over-the-counter medications, and alcohol
    - Common signs and symptoms of heat-related injury and illness and which symptoms require immediate emergency action
    - Work site-specific first aid and emergency response procedures for heat-related injuries and illnesses
    - Proper precautions for work in hot areas
    - The location of shaded/cool-down areas, procedures for ensuring effective observation and communication with employees, and how emergency medical services will be provided in the event of an emergency
    - Importance of frequent consumption of small quantities of water when the work environment is hot
    - Importance of taking rest breaks to prevent heat-related illness or injury
    - Proper use of PPE, and the importance of removing PPE that may impair cooling during breaks
    - Description of employer's acclimatization procedures and the importance of acclimatization
    - Employees' responsibilities for following proper work practices and control procedures, including the importance of reporting symptoms of heat-related illness
    - A description of the environmental monitoring program at the work site
    - Perceptions toward heat stress and common misperceptions
    - The location of written training materials

- A separate training for supervisors could be required to include the following topics:
    - The topics listed above
    - The procedures for implementing the applicable provisions of the rule
    - The procedures the supervisor must follow if an employee exhibits signs or symptoms of heat-related illness
    - The procedures for environmental monitoring at the work site

- The standard could require that training be conducted in a language and at a literacy level that the employee(s) and/or supervisor understands

- This training program could be required at certain frequencies, such as:
    - **Option**: Upon hiring and annually after that

    - **Option**: Upon hiring, annually after that, and a refresher course as necessary (e.g., following a heat-related injury or illness at the work site)
        - For indoor employees, prior to any work in hot environments or near heat-generating processes, annually after that, and a refresher course as necessary (e.g., following a heat-related injury or illness at the work site)
- Employers could be required to document attendance at heat-related trainings

Recordkeeping

The standard could require employers to maintain any or all of the following records:

- Environmental monitoring data (maintained for a certain period of time)
- A record of any heat-related illness or injury (including those that only require first aid) and the environmental and work conditions at the time of the illness or injury
- An accurate record of all heat acclimatization for new and returning employees

Communication on Multi-Employer Sites

The standard could require employers to have procedures to effectively communicate and coordinate with other employers at the same work site. OSHA could consider requiring the following:

- Host employers could be required to include a description of procedures to protect all employees on-site (e.g., contractors, vendors, staffing agencies, and licensed independent practitioners with privileges) from heat-related hazards
- The host employer could be required to establish and implement procedures to facilitate communication regarding the implementation of the HIIPP between the host employer and other employers on-site
- Other employers on a multi-employer work site could be required to include a description of how their HIIPP coordinates with that of the host employer

Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings

SER Background Document

Occupational Safety and Health Administration (OSHA)

U.S. Department of Labor
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Contents

Section I. Introduction

The Occupational Safety and Health Administration (OSHA) may propose a new standard to protect outdoor and indoor workers from hazardous heat. OSHA promulgates and enforces occupational safety and health standards under authority granted by the Occupational Safety and Health (OSH) Act of 1970 (29 U.S.C. § 651 et seq.). OSHA must promulgate its standards by following specific procedures set forth in the OSH Act. See 29 U.S.C. § 655.

OSHA has developed and published guidance with recommendations for heat injury and illness prevention. However, in the absence of a federal standard, multiple states have issued regulations to address heat hazards in the workplace. Five states have enacted laws that aim to protect employees exposed to hazardous heat conditions: Minnesota (Minn. R. 5205.0110 (1997)); California (Cal. Code of Regs. tit. 8, § 3395 (2005)); Washington (Wash. Admin. Code § 296-62-095 through § 296-62-09560 (2008); § 296-307-097 through § 296-307-09760 (2009); § 296-62-09560 (2022)); Oregon (Or. Admin. R. 437-002-0156 (2022); Or. Admin. R. 437-004-1131 (2022)); and Colorado (7 Colo. Code Regs. § 1103-15 (2022)). While Minnesota was the first state to adopt an occupational safety and health standard covering employees exposed to indoor environmental heat conditions, California was the first state to adopt a standard covering employees exposed to outdoor environmental heat conditions. Washington, Oregon, and Colorado have since enacted similar regulations to California's, requiring employers to implement controls and monitor for signs and symptoms of heat-related injury or illness, among other

requirements. In addition, four states have proposed new standards to address heat hazards in the workplace or revisions to current standards: California (2023), Washington (2023), Maryland (2022), and Nevada (2022). In July 2023, Washington adopted the proposed updates to their existing standards (Wash. Admin. Code § 296-62-095 through 296-62-09560; § 296-307-097 through § 296-307-09760 (2023)). Though California's existing standard covers outdoor work environments, their proposed standard would cover indoor work environments and include other requirements that differ from the existing standard. Washington's updated standards uphold similar provisions to their emergency temporary standard (ETS) enacted in 2022, which broadens protection for outdoor workers and requires employers to comply with additional protective measures at lower temperature thresholds regardless of the time of year.

OSHA has received multiple petitions to promulgate a heat injury and illness prevention standard in recent years, including in 2018 from Public Citizen, on behalf of approximately 130 organizations. OSHA has also been urged by members of Congress to initiate rulemaking for a federal heat standard. Based on current academic literature, best practices from state standards and scientific organizations, and input from experts, stakeholders, and the public through various channels, OSHA has developed a regulatory framework for a potential heat standard. The regulatory framework accompanies this document.

Workers in both outdoor and indoor work settings without adequate climate controls are at risk of hazardous heat exposure. Heat is the leading cause of death among all weather-related phenomena in the United States (National Weather Service [NWS], 2022a; NWS, 2022b). Excessive heat exacerbates existing health conditions like asthma, kidney failure, and heart disease, and can cause heat stroke and even death if not treated properly and promptly. Certain heat-generating processes, machinery, and equipment (e.g., hot tar ovens, furnaces) can also cause hazardous heat when cooling measures are not in place. In an evaluation of 66 heat-related illness enforcement investigations from 2011–2016, 80% of heat-related fatalities occurred in outdoor work environments. However, 61% of non-fatal heat-related illness cases occurred during or after work in an indoor work environment (Tustin et al., 2018). Some groups may be more likely to experience adverse health effects from heat, such as pregnant workers (NIOSH, 2017), while others are disproportionately exposed to hazardous levels of heat, such as workers of color in essential jobs, who are more often employed in work settings with a high risk of hazardous heat exposure (Gubernot et al., 2015).

According to the Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries, exposure to environmental heat has killed 999 U.S. workers from 1992–2021, with an average of 33 fatalities per year during that period (BLS, 2023a). In 2021 BLS reported 36 work-related deaths due to environmental heat exposure (BLS, 2023a). A recent analysis of BLS data by National Public Radio and Columbia Journalism Investigations found that the three-year average of heat-related fatalities among U.S. workers has doubled since the early 1990s (Shipley et al., 2021). The BLS Annual Survey of Occupational Injuries and Illnesses estimates 33,890 work-related heat injuries and illnesses involving days away from work from 2011–2020, which is an average of 3,389 injuries and illnesses occurring each year during this period (BLS, 2023b).

However, the estimates provided here on occupational heat-related illnesses, injuries, and fatalities are likely vast underestimates, as these events are underreported for several reasons. First, heat is not

always recognized as a contributing factor to an illness, injury, or fatality and the criteria for defining a case may vary by jurisdiction and among medical professionals (Gubernot et al., 2014). As the nature of heat-related symptoms (e.g., headache, fatigue) vary, some cases may be attributed to other illnesses rather than heat. Further, some cases may go unreported, as employers are only required to report incidents that meet OSHA's existing injury reporting requirements (see 29 CFR 1904.7(a)). There may also be situations where heat exposure at work contributes to illness, injury, or fatality, but is deemed unrelated to work (Gubernot et al., 2014; Shipley et al., 2021).

Second, hazardous heat can impair job tasks related to complex cognitive function (Ebi et al., 2021) and reduce decision-making abilities and productivity. This has been linked to an increase in occupational injuries that are not currently included in assessments of the health hazards resulting from occupational heat exposure (Park et al., 2021).

Third, self-reporting of health outcomes can result in bias which can lead to over- or under-estimates of health outcomes (Althubaiti, 2016). The BLS Survey of Occupational Injuries and Illnesses, which relies heavily on employer self-reporting of non-fatal injuries and illnesses, may underreport employer-reported injury and illness data (GAO, 2009). This underreporting of non-fatal illnesses and injuries may be particularly present in some industries, like agriculture, where some employers (e.g., employers with 10 or fewer employees) are excluded from reporting requirements (Leigh et al., 2014). Employers and employees may also be disincentivized from reporting injuries and illness, due to factors such as an increase in an employer's workers' compensation costs or impact on their reputation, or an employee's fear of retaliation or lack of awareness of their right to speak out about workplace conditions (BLS, 2020).

A standard specific to heat-related injury and illness prevention would more clearly set forth employer obligations and the measures necessary to more effectively protect employees from hazardous heat. The ultimate goal is to prevent and reduce the number of occupational injuries, illnesses, and fatalities caused by exposure to hazardous heat.

OSHA uses several terms related to excessive heat exposure throughout this document. Heat stress means the combined load of heat that a person experiences from sources of heat (i.e., metabolic heat and the environment) and heat retention (e.g., from clothing or personal protective equipment). Heat strain refers to the physiological responses to heat exposure (American Conference of Governmental Industrial Hygienists [ACGIH], 2023). Heat-related illness means adverse clinical health outcomes that occur due to exposure to hazardous heat. Heat-related injury means an injury linked to heat exposure that is not considered one of the typical symptoms of heat-related illness, such as a fall or cut. The document also uses the combined term "heat injury and illness" when both heat injury and illness should be considered.

This document provides an overview of several options that OSHA is considering for a standard to protect outdoor and indoor workers from hazardous heat. OSHA is interested in learning about the experience of employers who have implemented any of these options as well as the effectiveness of these options to protect workers from hazardous heat. OSHA is also interested in information on the

number, percent, or types of employers who are currently implementing these various options to protect workers from hazardous heat.

This document also provides estimates of the time and resources needed for each option. Depending on wages and prices, these will translate into varying dollar costs for different employers. Because the relevant wages, prices, and dollar costs vary for different employers, these wages, prices, and costs are not estimated in this document. OSHA is interested in additional information on the time, resources, costs, and feasibility or difficulties in implementing any of these options.

Events Leading to SBREFA

On October 27, 2021, OSHA published an Advance Notice of Proposed Rulemaking (ANPRM) for Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings (referred to as "the ANPRM" hereafter) in the Federal Register. The ANPRM outlined key issues and challenges in occupational heat-related injury and illness prevention and aimed to collect evidence, data, and information critical to informing how OSHA proceeds in the rulemaking process. The ANPRM included background information on injuries, illnesses, and fatalities due to heat, underreporting, scope, geographic region, and inequality in exposures and outcomes. The ANPRM also covered existing heat illness prevention efforts including OSHA's efforts, the National Institute for Occupational Safety and Health (NIOSH) criteria documents, state standards, and other standards. The initial public comment period was extended and closed on January 26, 2022. In response to the ANPRM, OSHA received 965 unique comments, including from small business representatives.

Following the publication of the ANPRM, OSHA presented ANPRM-related topics to several stakeholders including several trade associations, the Small Business Administration's Office of Advocacy (SBA's Office of Advocacy, or Advocacy) Labor Safety Roundtable (November 19, 2021), and NIOSH National Occupational Research Agenda (NORA) councils, including the Construction Sector Council (November 17, 2021), Landscaping Safety Workgroup (January 12, 2022), and Oil and Gas Extraction Sector (April 7, 2022).

On May 3, 2022, OSHA held a virtual public stakeholder meeting on the Agency's Initiatives to Protect Workers from Heat-Related Hazards. A total of over 1,300 people attended the virtual meeting, and the recorded video has been viewed over 3,300 times (see https://www.youtube.com/watch?v=Ud29WsnsOw8). The six-hour meeting provided stakeholders, including small business representatives, an opportunity to learn about and comment on efforts OSHA is taking to protect workers from heat-related hazards and ways the public can participate in the Agency's rulemaking process.

OSHA also established a Heat Injury and Illness Prevention Work Group of the National Advisory Committee on Occupational Safety and Health (NACOSH) to support the Agency's rulemaking and outreach efforts. The Work Group was tasked with reviewing and developing recommendations on OSHA's heat illness and prevention guidance materials, evaluating stakeholder input, and developing recommendations on potential elements of any proposed heat injury and illness prevention standard. On May 31, 2023, the Work Group presented its recommendations on potential elements of a proposed heat injury and illness prevention standard for consideration by the full NACOSH committee. After

deliberations, NACOSH amended the report to ask OSHA to include a model written plan and then submitted its recommendations to the Secretary of Labor. NACOSH meetings are open to the public and are announced in the Federal Register. These meetings routinely have over 100 participants from the public in attendance.

The SBAR Panel Process

As an initial rulemaking step, and prior to the publication of a proposed rule, OSHA is convening a Small Business Advocacy Review Panel (SBAR Panel) in accordance with the Regulatory Flexibility Act, or RFA (Sections 601 through 612 of Title 5 of the United States Code). This Panel consists of members from OSHA, the SBA's Office of Advocacy, and the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget (OMB). The SBAR Panel identifies individual representatives of affected small entities, termed Small Entity Representatives (SERs), which includes small businesses, small not-for-profit organizations, and small local government entities. This process enables OSHA, with the assistance of Advocacy and OIRA, to obtain advice and recommendations from SERs about the potential impacts of the regulatory options outlined in the regulatory framework and about additional options or alternatives to the regulatory framework that may alleviate those impacts while still meeting the objectives and requirements of the OSH Act.

The SBAR Panel has several purposes under the RFA, which establishes the requirements for a Panel. First, the Panel provides an opportunity early in the rulemaking process for affected SERs to provide comments. Second, after reviewing the regulatory framework and estimates of the potential impacts of options for a rule, SERs can offer recommendations to the Panel on ways to tailor options for provisions to make them more cost effective and less burdensome for affected industries. Third, early comments permit identification of additional options or alternatives to the regulatory framework for the Panel to consider. Finally, SERs can provide specific recommendations for the Panel to consider on issues such as reporting requirements, timetables of compliance, and whether some groups or industries should be exempt from all or part of the rule. A final report containing the findings, advice, and recommendations of the Panel will be submitted to the Assistant Secretary of Labor for Occupational Safety and Health to help inform the agency's decision making with respect to this possible rulemaking.

This SER Background Document has been prepared to facilitate the SBAR Panel process. In addition to this introductory section, the SER Background Document contains the following sections:

- **Section II** summarizes and explains potential elements and options for a standard as outlined in OSHA's regulatory framework;
- **Section III** provides information on the potential impacts of a standard as outlined in the regulatory framework;
- **Appendix A** describes potentially overlapping Federal rules; and
- **Appendices B and C** identify the types of small entities that would likely be affected by a standard as outlined in the regulatory framework.

Some of the most valuable contributions SERs make in the SBAR Panel process are their comments on the options presented and their suggestions for other possible options.

Section II. Description of Potential Elements and Options OSHA is Considering

Introduction

OSHA envisions a programmatic standard that could require employers to develop a heat injury and illness prevention plan to evaluate and control heat hazards in their workplace. The standard could allow for flexibility for employers to customize the plan to their workplace but could also include some elements that set specifications related to heat exposure levels. This section is meant to provide additional information about and rationale for the potential options for the elements listed in the accompanying regulatory framework. These options are designed to serve as discussion points with SERs during the SBAR Panel. Many of the options described in the regulatory framework and discussed below are based on existing and proposed state standards, stakeholder comments, the American Conference of Governmental Industrial Hygienists' (ACGIH) 2023 *TLVs and BEIs* book, and the NIOSH *Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments* (2016) (referred to as the "Criteria Document" hereafter).

The elements in this regulatory framework represent provisions that OSHA believes, at this point, are important elements of any standard to protect outdoor and indoor workers from hazardous heat, while providing flexibility and not unnecessarily burdening affected entities. While the options for some elements could eventually be reduced to a single requirement in the regulatory text of a potential rule, there could also be instances in which the regulatory text contains multiple options for a particular element from which employers could choose. Some existing state standards have taken this approach of having multiple compliance options for required elements, such as rest breaks (OR, 2022a; OR, 2022b), acclimatization (OR, 2022a; OR, 2022b), and supervision (WA, 2009; WA, 2022). In addition, while some elements might be required for all covered workplaces, others might only be required when the temperature is at or above an initial heat trigger or a high-heat trigger.

Figure 1 below summarizes potential elements and when they might be required.

Figure 1. Potential elements and when they might be required

Potential Elements	All Covered Workplaces (see Scope)	At or Above Initial Heat Trigger	At or Above High-Heat Trigger
Hazard identification and monitoring (based on forecast or workplace measurements)	●	●	●
Drinking water	●	●	●
Emergency response procedures	●	●	●
Training for employees and supervisors	●	●	●
Heat injury and illness prevention plan	●	●	●
Recordkeeping	●	●	●
Shade or cool-down area		●	●
Indoor air movement and humidity control		●	●
Acclimatization for new or returning workers, and during heat waves		●	●
Rest breaks (as needed or 10 min every 2 hours)		●	●
Effective communication means with employees		●	●
Rest breaks (minimum 15 min every 2 hours)			●
Supervisor or buddy system to observe for signs and symptoms			● (+ during acclimatization)
Pre-shift meetings or employee notifications			●

Scope

Workers across hundreds of industries are at risk for hazardous heat exposure. OSHA is considering coverage of outdoor and indoor workers in any/all General Industry, Construction, Maritime, and Agriculture sectors where OSHA has jurisdiction. Therefore, OSHA has sought participation from a wide range of sectors and welcomes SERs from any industry that might be affected. The agency is particularly interested in feedback from the core industries, identified in Appendix B, which it expects to be most affected by such a standard.

Regulating both outdoor and indoor work is consistent with NIOSH recommendations and regulations from several of the states that have enacted or proposed heat-specific standards. The NIOSH Criteria Document highlights the need to protect "workers who are exposed to extreme heat or work in hot environments indoors or outdoors" (p. v). Of the states that have enacted and proposed heat standards, several consider any outdoor work (CA, 2005; WA, 2008; WA, 2009; WA, 2022; WA, 2023) or any indoor work (MN, 1997, CA, 2023) to be within their scope. Others consider all outdoor and indoor work settings to be within scope, so long as they exceed a certain temperature (OR, 2022a; OR, 2022b; MD, 2022; NV, 2022). Finally, in their state regulation, Colorado considers only agricultural work sites, both outdoor and indoor, to be within scope, so long as they exceed a certain temperature (CO, 2022).

OSHA is considering exempting short exposures to hazardous heat (e.g., 15 minutes of work every 60 minutes), which is consistent with enacted and proposed state standards (OR, 2022a; OR, 2022b; WA, 2008; WA, 2009; WA, 2022; WA, 2023; CO, 2022; MD, 2022). OSHA could also exempt emergency operations, such as those already covered under 29 CFR 1910.156 or 29 CFR 1910.120, which is consistent with Oregon's standards and Maryland's proposed standard (OR, 2022a; OR, 2022b; MD, 2022). OSHA is also considering exempting work in spaces where mechanical ventilation keeps work areas below certain conditions (e.g., the ambient temperature of 80°F), as well as work done from home (e.g., telework, remote, and hybrid employees); both exemptions are largely consistent with Oregon's standards that exempt these types of work from many or all of the provisions (OR, 2022a; OR, 2022b). Finally, OSHA could exempt sedentary or light work activities performed indoors, if these are the only activities performed during the work shift. This exemption is in line with Oregon's standards, which exempt this type of work at a heat index below 90°F (OR, 2022a; OR, 2022b). OSHA is also interested in whether the Agency should exempt outdoor sedentary activities and how such activities might be best defined.

Heat Injury and Illness Prevention Program

OSHA is considering requiring employers to create a written Heat Injury and Illness Prevention Program (HIIPP), developed with the input of employees, that could include:

- Procedures to identify when heat hazards exist for employees, including procedures for environmental monitoring and the identification of work processes and external factors that increase the likelihood of heat-related injury and illness
- Procedures for implementing engineering controls
- Procedures for implementing administrative controls, including the provisions of drinking water, rest breaks in a cool and/or shaded area, acclimatization protocols for new and returning employees, and supervision of employees for signs and symptoms of heat-related illness
- Procedures for high heat
- Procedures for when employees are exhibiting symptoms of heat-related illness and emergency response procedures
- Training of employees and supervisors
- Selection of designated individual(s) to oversee and implement the HIIPP, including environmental monitoring

Requiring a HIIPP is consistent with regulations from several of the states that have enacted or proposed heat-specific standards. A combination of the elements OSHA is considering (above) are currently included in existing heat standards from California, Washington, and Oregon (CA 2005; WA, 2008; WA, 2009; WA, 2022; WA, 2023; OR, 2022a; OR, 2022b). Currently, Maryland and Nevada have proposed heat standards that would also require a combination of the elements listed above in a HIIPP (MD, 2022; NV, 2022). These elements are also found in the NIOSH Criteria Document (NIOSH, 2016).

OSHA is considering exempting very small employers (e.g., those with 10 or fewer employees) from requirements to have a written HIIPP.

OSHA could require employers to make the HIIPP available at the work site to employees and governmental representatives. Additionally, OSHA could require employers to review and update the HIIPP on a periodic basis, with the involvement of employees. Options for frequency of review include: 1) whenever necessary to ensure its ongoing effectiveness; 2) whenever a heat-related illness or injury occurs; 3) annually; or 4) whenever a heat-related illness or injury occurs, but no less than annually.

Hazard Identification and Assessment

The standard could require employers to identify if and when heat hazards exist for their employees.

Multiple metrics exist for assessing heat hazards and are used in existing and proposed state heat-specific standards: ambient temperature (CA, 2005; WA, 2008; WA, 2009; WA, 2022; WA, 2023; CO, 2022; NV, 2022), heat index (OR, 2022a; OR, 2022b; MD, 2022), and wet bulb globe temperature (WBGT) (MN, 1997).

- Ambient temperature, which can be measured using a common thermometer
- Heat index combines ambient temperature and humidity and is a widely reported weather statistic that is often referred to as the ‘‘feels like’’ or ‘‘apparent’’ temperature
- WBGT incorporates air temperature, wind, radiant heat, and humidity

Outdoor Work Sites

For outdoor work sites, OSHA is considering requiring employers to monitor weather conditions at their work site to determine when there is a heat hazard. OSHA is currently considering two options—having employers track local weather forecasts and/or having them conduct onsite monitoring (i.e., measurements). If employers rely on forecasts alone, OSHA is considering requiring them to implement controls for the whole day when local forecasted conditions meet or exceed certain heat triggers (see *Heat Triggers* section below). If employers rely on onsite monitoring, they could conduct monitoring routinely during the work shift every day or rely on forecasts to determine which days would warrant onsite monitoring (i.e., when the local forecasts indicate the initial heat triggers might be met or exceeded).

For outdoor work sites, OSHA is considering the following options for monitoring weather conditions to determine when there is a heat hazard:

- **Track local forecasts** of ambient temperature and humidity provided by the National Weather Service (or others) to determine daily maximum heat index
    - ***Optional to account for dry climates*:** For low forecasted relative humidity (e.g., below 30%), the employer could rely on ambient temperature alone.

- **Measure work area heat conditions** every day or when local forecasted conditions meet or exceed relevant triggers (see forecast heat triggers in Table 1)
    - **Option:** Employers measure heat index or ambient temperature and humidity to calculate heat index (employers could use the OSHA-NIOSH Heat Safety Tool App as a calculator or the online calculator available from the National Weather Service) at or as close as feasible to the work area at some periodic interval (e.g., hourly)

- ***Optional to account for dry climates***: For low forecasted relative humidity (e.g., below 30%), the employer could rely on ambient temperature alone.
- ***Optional for employees in non-breathable PPE*:** Employers could rely on ambient temperature triggers when employees are wearing vapor-impermeable protection (i.e., coveralls or other non-breathable clothing that prevents the transfer of moisture and impairs the ability of the body to cool down via sweat evaporation.)

- **Option**: Employers measure wet bulb globe temperature at or as close as feasible to the work area (i.e., area where one or more employees are working within the work site) at some periodic interval (e.g., hourly)

Exception: OSHA is considering permitting an employer to assume that a work area meets or exceeds both heat triggers (see *Heat Triggers* section) instead of tracking forecasts or conducting onsite monitoring. Employers that use this exception would be required to comply with the relevant control measures outlined in this document whenever employees are on site.

Indoor Work Sites

OSHA is considering requiring employers to conduct a hazard assessment to identify the indoor work areas or processes where there is the potential for employees to be exposed to heat hazards, including a determination of whether and when outdoor heat affects indoor conditions at the work site (e.g., regularly, during heat waves). When information gathered during the hazard assessment indicates that any employee's exposure may equal or exceed relevant heat triggers (see *Heat Triggers* section), the employer could be required to develop a monitoring program to identify when employees are exposed to heat at or above the relevant triggers. Employers could be required to conduct additional monitoring or a new hazard assessment whenever a change in production, process, equipment, or controls has the potential to increase heat exposure.

For indoor work sites, OSHA is considering the following monitoring options:

- **Option**: Employers measure heat index or ambient temperature and humidity to calculate heat index (employers could use the OSHA-NIOSH Heat Safety Tool App as a calculator or the online calculator available from the National Weather Service) at or as close as feasible to the work area
  - ***Optional to account for dry work sites***: If the indoor relative humidity is below a certain threshold (e.g., 30%), the employer could rely on ambient temperature alone.
  - ***Optional for employees in non-breathable PPE*:** Employers could rely on ambient temperature triggers when employees are wearing vapor- impermeable protection (i.e., coveralls or other non-breathable clothing that prevents the transfer of moisture and impairs the ability of the body to cool down via sweat evaporation.)
- **Option**: Employers measure wet bulb globe temperature at or as close as feasible to the work area

Exception: OSHA is considering permitting an employer to assume that a work area meets or exceeds both heat triggers (Table 1) instead of monitoring. Employers that use this exception would be required to comply with the relevant control measures outlined in this document whenever employees are on site.

Heat Triggers

The standard could specify that certain control measures would be required at a temperature-based "initial heat trigger." Additional measures (referred to as "high-heat procedures") could be required at a "high-heat trigger." OSHA is considering having different heat triggers for employers who track local weather forecasts in lieu of conducting onsite monitoring due to the anticipated variability between forecasted conditions and onsite conditions.

Table 1. Options for heat triggers being considered by OSHA

	Initial Heat Trigger			High-Heat Trigger		
	Ambient	Heat Index	WBGT	Ambient	Heat Index	WBGT
When using a forecast	78°F or higher	76°F or higher	N/A	86°F or higher	83°F or higher	N/A
When measuring onsite	82°F or higher	80°F or higher	ACGIH AL or NIOSH RAL	90°F or higher	87°F or higher	ACGIH TLV or NIOSH REL

Note: The values in this table represent the minimum values currently being considered.

OSHA recognizes that WBGT measurements may be more challenging for some small employers, and thus is considering heat trigger options using simpler heat index or ambient temperature measurements consistent with most state heat-specific standards (see below). As such, OSHA does not currently envision a standard that would require WBGT measurements without providing employers with one or more options for simpler heat index or ambient temperature measurements. However, for employers that choose to use WBGT measurements and the ACGIH approach to calculate the Threshold Limit Value (TLV) or the NIOSH approach to calculate the Recommended Exposure Limit (REL), as detailed in the ACGIH 2023 *TLVs and BEIs* book and NIOSH Criteria Document, respectively, OSHA is considering allowing these employers to treat these limits as the high-heat trigger. Similarly, OSHA is considering allowing these employers to treat the ACGIH Action Limit (AL) or the NIOSH Recommended Alert Limit (RAL) as the initial heat trigger.[1] OSHA welcomes feedback on the appropriateness of this potential approach and could also consider presenting set WBGT triggers, as is currently proposed for heat index and ambient temperature. OSHA is open to comments or suggestions addressing how best to allow employers who choose to measure WBGT and use the ACGIH and/or NIOSH limits in their workplace to continue doing so.

OSHA is considering requiring high-heat procedures (i.e., those that would normally be required at the "high-heat trigger") when workers are required to wear vapor-impermeable clothing or an additional layer of clothing (e.g., coveralls) and the temperature is at or above some other heat trigger. OSHA is considering the possibility of a lower heat trigger for high-heat procedures under these circumstances

[1] OSHA acknowledges that these exposure limits (ACGIH TLV and NIOSH REL) and action limits (ACGIH AL and NIOSH RAL) may not have been intended by NIOSH and ACGIH to be used as triggers in the way that the agency is currently considering, and they were designed to account for acclimatized and unacclimatized workers, respectively. However, as outlined in their most recent TLV guidelines, ACGIH describes as "Method 2" an approach for using the AL and TLV to determine when to implement general and job-specific controls, respectively, (ACGIH, 2023), like the approach outlined here.

because these types of clothing impair ability to cool down. OSHA welcomes feedback on options for this trigger.

OSHA is also considering providing a definition for a "heat wave," and additional requirements could be triggered whenever there is a heat wave, such as an additional acclimatization protocol. Options for heat wave definitions that OSHA is considering include 1) whenever the National Weather Service issues a heat advisory or heat warning for the local area, or 2) when the daily maximum temperature exceeds 90°F and is 9°F or more above the maximum reached on the preceding days. OSHA acknowledges that the specific conditions that constitute a heat wave vary across the country; the Agency is open to suggestions for easy-to-use approaches for heat wave definitions that can account for this variability.

The minimum options OSHA is currently considering for initial ambient temperature and heat index triggers are 82°F and 80°F, respectively, for on-site measurements. These are comparable with those in heat-specific standards adopted or proposed by states. As indicated in the table below, the states use various initial heat triggers, some of which are dependent on the clothing or gear worn by workers. Some of the options for initial heat triggers OSHA is considering are the same as those used by states (CA, 2005; OR, 2022a; OR, 2022b; CO, 2022; WA, 2023). Although other states use different triggers, they are comparable with the options OSHA is considering. California and Colorado use an ambient temperature trigger of 80°F for outdoor work sites and agricultural sites, respectively, as does the Washington updated standard for workers wearing breathable clothing (CA, 2005; CO, 2022; WA, 2023). California's proposed indoor standard uses an ambient temperature trigger of 82°F, while Nevada's proposed standard for indoor and outdoor work sites uses 90°F (CA, 2023; NV, 2022). The states using heat index for outdoor and indoor work sites vary in their triggers: 80°F in Oregon and 88°F in the Maryland proposal (OR, 2022a; OR, 2022b; MD, 2022).

The minimum options OSHA is currently considering for high-heat ambient and heat index triggers are 90°F and 87°F, respectively, for on-site measurements. These are also comparable with those in adopted or proposed heat-specific state standards. While California and Colorado use an ambient temperature high-heat trigger of 95°F, the Washington updated standard uses 90°F and the Washington ETS and Agriculture standard use 89°F (CA, 2005; CO, 2022; WA, 2023; WA, 2022; WA, 2009). The California indoor proposal uses an ambient temperature or heat index trigger of 87°F to impose additional requirements (CA, 2023). Oregon uses a heat index of 90°F for both outdoor and indoor work sites to trigger additional high-heat requirements (OR, 2022a; OR, 2022b).

OSHA welcomes feedback on the temperature thresholds it is currently considering for initial and high-heat triggers.

These heat triggers from state heat-specific standards are summarized in the table below:

Table 2. Heat triggers in state heat standards

	Setting	Initial Heat Trigger	High-Heat Trigger
California	Outdoor	80°F (Ambient)	95°F (Ambient)
Washington ETS, Ag, and General Industry	Outdoor	89°F (Ambient) (all other clothing); 77°F (double-layer woven clothes); 52°F (non-breathable clothes)	89°F (Ambient, Ag + ETS only)
Washington (updated)	Outdoor	80°F (Ambient) (all other clothing); 52°F (non-breathable clothes)	90°F (Ambient)
California (proposal)	Indoor	82°F (Ambient)	87°F (Ambient or Heat Index), except for certain clothing or in high radiant heat (82°F)
Minnesota[1]	Indoor	86°F (WBGT), Light work; 80°F, Moderate work; 77°F, Heavy work	
Oregon Ag and General Industry	Indoor/Outdoor	80°F (Heat Index)	90°F (Heat Index)
Maryland (proposal)	Indoor/Outdoor	88°F (Heat Index) and the presence of external influencing factors	
Nevada (proposal)	Indoor/Outdoor	90°F (Ambient)	
Colorado	Indoor/Outdoor Agriculture only	80°F (Ambient)	95°F (Ambient) or other conditions

[1]-Minnesota uses a 2-hour time-weighted average permissible exposure limit rather than a trigger

Note that there are different provisions required at each trigger by each state.

Hazard Prevention and Control Measures

OSHA is considering requiring some combination of engineering and administrative controls. Possible options are described below.

Engineering Controls

Engineering controls aim to isolate workers from a hazard and can include adjusting a work site or equipment (e.g., using quieter tools to reduce the risk of hearing loss), ventilating a workspace (e.g., using local exhaust ventilation to capture and remove airborne emissions), and installing protective barriers (e.g., machine guards), among others (NIOSH, 2023, Hierarchy of Controls section). These controls can be highly effective in protecting workers, as many entail physical alteration of the work site and are independent of worker and supervisor behavior (NIOSH, 2015, Directory of Engineering Controls section).

A potential standard could require employers to implement engineering controls in areas where the temperature is at or above the initial heat trigger (see Table 1). Options for engineering controls OSHA is currently considering for different types of work sites are discussed below.

Outdoor Work Sites

OSHA is considering requiring the provision of a designated cool-down area(s) for outdoor work sites. The provision of cool-down areas for breaks is consistent with several state regulations (CA, 2005; CO, 2022; OR, 2022a; OR, 2022b; WA, 2009; WA, 2022). The Agency is considering the following options for cool-down areas at outdoor work sites, which are described in further detail below: 1) cooling measures, if the employer can demonstrate that they are at least as protective as shade; 2) shade that provides complete blockage of sunlight; 3) air-conditioned space; and 4) any combination of options 1 through 3.

Cooling measures could include cooling fans and misting machines that are demonstrated by the employer to be at least as protective as shade. According to the NIOSH Criteria Document, the use of cooling fans and misting machines can increase air velocity and evaporative and convective heat loss (NIOSH, 2016). In addition, California, Oregon, and Washington allow for the use of alternative cooling measures, such as fans and misting systems, when it is not feasible or safe to provide shade, as long as the alternative provides equivalent protection (CA, 2005; OR, 2022a; OR, 2022b; WA, 2009; WA, 2022; WA, 2023).

Shaded areas could be natural shade, such as from trees, or artificial shade from tents, canopies, or pavilions, that provide a complete blockage of sunlight (i.e., workers must not be able to see their shadow) and are open to the outside air to allow natural air flow or be equipped with mechanical ventilation for cooling. Shade should not be from equipment, which presents potential safety concerns. A shaded area needs to be large enough to accommodate the number of employees on recovery or rest periods and located as close as practical to the work area. Several state heat-specific standards contain provisions for a shaded area. Colorado, California, Oregon, and Washington all require access to shade for breaks and require that the shade be located as close as practical to areas where employees are working and provided with ventilation if the shaded area is not open to the air (CO, 2022; CA, 2008; OR 2022a; OR, 2022b; WA, 2009; WA, 2022; WA, 2023). Oregon specifically requires that if trees or other vegetation are used to provide shade, the thickness and shape of the shaded area must provide sufficient shadow to protect employees (OR, 2022a; OR, 2022b).

Air-conditioned cool-down areas (e.g., trailers, vehicles, structures) need to be large enough to accommodate the number of employees on recovery or rest periods and located as close as practical to the work area. It is important to keep in mind that certain spaces equipped with air conditioning can also be a source of heat exposure (e.g., a vehicle that has been parked in the sun). Therefore, employers would need to allow the inside of air-conditioned cool-down areas to cool prior to using them for employee rest breaks. The use of air-conditioned spaces reduces the air temperature workers are exposed to and increases convective heat loss (NIOSH, 2016). Additionally, the use of air-conditioned spaces is consistent with state requirements. In their state regulations, both Colorado and Washington include the use of an air-conditioned site, such as a vehicle or structure, as an alternative to providing shade for employee rest breaks (CO, 2022; WA, 2009; WA, 2022; WA, 2023).

Indoor Work Sites

OSHA is also considering a variety of options for the use of engineering controls for indoor work sites. Those options are as follows:

- Employee cool-down areas (e.g., break room or trailer) provide employees a place for rest and recovery. Cool-down areas need to be large enough to accommodate the number of employees on recovery or rest periods and be located as close as practical to the work area. Cool-down areas should have some combination of air movement and humidity control or the area could be air-conditioned. To accomplish this, employers could use portable air coolers and/or fans, as well as dehumidifiers in humid conditions; in arid environments, evaporative coolers could be used.

- Where employees work primarily from fixed or designated locations in the workplace, controls can be used to reduce heat exposure at the specific work area. For example, fans or natural ventilation could be used to increase air movement at the work areas (where it would not increase the exposure to contaminants). Additionally, work area controls could provide some combination of increased air movement (except where it would increase exposure to contaminants) and humidity control (depending on temperature and humidity status of work area). When feasible, air-conditioning for work areas or control booths (if applicable) is also an option.

- Where the source of heat is from a fixed heat-generating source, controls can be used to reduce exposures to radiant heat. Options include: installing a hood with local exhaust ventilation over or around heat-generating sources to pull heated air away from the worker; installing shielding or barriers that are radiant-reflecting or heat-absorbing to reduce the amount of radiant heat to which the worker would otherwise be exposed; isolating the source of radiant heat; adding thermal insulation on hot pipes and surfaces; increasing the distance between workers and the heat source; modifying the hot process or operation; and installing waste heat recovery technology.

These control methods are consistent with those described in a Minnesota heat stress guidance product (MNOSHA, 2009).

Vehicles

Lastly, OSHA is considering requirements for cooling mechanisms in the cabs of employer-provided vehicles (e.g., company delivery vehicles, company vehicles for travel between work sites, etc.). The use of cooling mechanisms could be limited to certain conditions, such as where temperatures are regularly above the high-heat trigger or when workers spend most of their shift working in or from the vehicles (e.g., delivery drivers).

Administrative Controls

Administrative controls modify work practices to reduce the duration, frequency, or intensity of exposure to hazards, primarily through establishing procedures, trainings, and warnings, and in conjunction with other controls (e.g., engineering) (NIOSH, 2023, Hierarchy of Controls section). Below are the options OSHA is currently considering for administrative controls.

Water

While there are existing OSHA requirements for employers to provide potable drinking water (e.g., 29 CFR 1910.141(b)(1)), the Agency is considering specifying additional requirements for location, temperature, and quantity to reduce the risks associated with hazardous heat exposure. The standard could require that employers provide drinking water located as close as practical to the work area, with each employee having access to at least one quart (32 fluid ounces) of suitably cool drinking water per hour and having ample opportunity and encouragement to drink small amounts of water or other acceptable beverages.

Several state standards currently require access to sufficient drinking water. California requires employers to provide potable drinking water that is suitably cool and located as close as practical to areas where employees are working at all times (CA, 2005). Where drinking water is not plumbed, California requires employers to provide one quart of drinking water per hour to employees for the entire shift (CA, 2005). At certain temperature triggers, Oregon, Washington and Colorado require employers to supply at least one quart of suitably cool drinking water per hour to employees (OR, 2022a; OR, 2022b; WA, 2008; WA, 2009; WA, 2022; WA, 2023; CO 2022). Colorado requires that drinking water temperature be kept at 60 degrees or cooler (CO, 2022), while Oregon defines cool water as 66-77°F (OR, 2022a; OR, 2022b). At the time of publication of this document, Maryland, Nevada, and California also include provisions on drinking water in their proposed standards (MD, 2022; NV, 2022; CA, 2023; WA, 2023).

Protections for Unacclimatized Workers

The standard could require employers to adopt protections for new and returning employees who may not be acclimatized to working in the heat at or above the initial heat trigger. Similar protections could also be adopted for all employees during a local heat wave because heat waves represent abnormal conditions for workers.

OSHA investigations have shown that approximately 70% of heat-related deaths occur in the first few days of work (i.e., among new or unacclimatized employees) (Tustin et al., 2018). Even employees who *have* been acclimatized may not retain the physiological benefits associated with acclimatization if they are away from work for several days (i.e., returning employees), or if they are working during a heat wave.

Workers can improve their bodies' tolerance to heat by undergoing an acclimatization protocol, which involves brief daily exposures to work in the heat (NIOSH, February 2016). Acclimatization is a key administrative control that enhances workers' ability to work in hot environments and reduces their risk for heat-related injury and illness, as well as death (NIOSH, February 2016). OSHA is considering a variety of options for acclimatization for new and returning workers (i.e., workers who have previous experience with the job but have been away from the job for some period), as well as for all workers during local heat waves. All acclimatization options would only apply when employees are working in heat at or above the initial heat trigger.

OSHA is considering three options that could apply to new and returning employees, as well as all employees during a local heat wave. The first option would require employers to develop a plan that

includes training on heat hazard awareness before work begins in addition to increased monitoring and communication by the supervisor for the first week of work. This option is consistent with several state standards and proposed standards (CA, 2005; WA, 2009; WA, 2022; OR, 2022a; OR, 2022b; CO, 2022; CA, 2023; MD, 2022; NV, 2022; CA, 2023; WA, 2023) that require employers to: 1) provide heat hazard awareness training before work begins; and/or 2) increase monitoring and communication during the first week. The second option would require employers to develop their own acclimatization protocol. An employer-developed protocol would need to account for the work tasks performed by employees, clothing/PPE worn, and environmental risk factors, which is consistent with Oregon's heat standards (OR, 2022a; OR, 2022b). OSHA could establish a minimum protocol for this option. The third option would require employers to follow the *high-heat procedures* at the *initial* heat trigger (Table 1) for the first week of work. Colorado's heat standard includes a similar provision that applies to new and returning employees, working at or above the initial heat trigger, during their first four days of work (CO, 2022).

Another option OSHA is considering is the implementation of an acclimatization schedule. If OSHA were to include this option in any proposed rule, OSHA is considering different schedules for new and returning employees. For new employees, OSHA could require an acclimatization schedule based on the ''Rule of 20 Percent.'' That is, "the schedule should be no more than 20% of the usual duration of work in the hot environment on day 1, increasing by no more than 20% each day [to 40% on day 2, 60% on day 3, 80% on day 4, and 100% on day 5] (NIOSH, 2016 Table 4-1; OSHA, 2021). This acclimatization schedule is also referenced in Oregon's heat standards (OR, 2022a; OR, 2022b) and recommended in OSHA/NIOSH guidance (OSHA, 2014; NIOSH, 2018).

For returning employees who have previous experience with the job but have been away from the job for some period (e.g., 7, 14, or 30 days), OSHA could require employers to implement an acclimatization schedule that "should be no more than 50% of the usual duration of work in the hot environment on day 1, 60% on day 2, 80% on day 3, and 100% on day 4" (NIOSH, 2016 Table 4-1; OSHA, 2021). This acclimatization schedule is also referenced in Oregon's heat standards (OR, 2022a; OR, 2022b) and OSHA/NIOSH guidance (OSHA, August 2014; NIOSH, 2018). Returning workers are more likely to have some level of acclimatization based on previous work exposures prior to their leave of absence. OSHA is also considering this acclimatization schedule for all employees during a local heat wave.

The options listed above would also apply to temporary employees. However, OSHA is considering exempting newly hired employees who report having recently (e.g., in the prior week) performed the same work tasks in similar heat conditions.

Rest/Work-Rest

OSHA is considering requiring employers to provide employees with rest breaks in a cool and/or shaded area to limit employees' exposure to hazardous heat, which is consistent with the NIOSH Criteria Document and several state standards and proposed standards (NIOSH, 2016; CA, 2005; CA, 2023; WA, 2009; WA, 2022; WA, 2023; OR, 2022a; OR, 2022b; CO, 2022). Rest breaks are an important control that allow workers to cool down after exposure to hazardous heat. Taking breaks slows down the body's heat accumulation (Dukes-Dobos & Henschel, 1973), thereby reducing heat strain.

OSHA is considering two options regarding the location of rest break areas: 1) near drinking supplies; or 2) near drinking supplies *and* restroom facilities, so that employees are not discouraged from adequately hydrating. If OSHA were to require the provision of designated cool-down areas in any potential standard (see discussion of possible engineering controls above), rest breaks could be provided in those areas.

OSHA is considering different options for frequency of breaks at the initial and high heat triggers. At or above the initial heat trigger (Table 1), OSHA is considering two options for rest breaks. The first option would require employers to allow and encourage their employees to take rest breaks *as needed* to prevent overheating. The second option would require employers to provide a minimum 10-minute rest break at least every two hours. The first option is consistent with many enacted and proposed state standards (CA, 2005; CA, 2023; WA, 2009; WA, 2022; WA, 2023; CO, 2022).

At or above the high-heat trigger (Table 1), OSHA is also considering two options for rest breaks. One option would require employers to provide a minimum 15-minute rest break at least every two hours. The other option would allow employers to develop their own work-rest schedule, with a minimum 15-minute rest break every two hours and increase break duration and/or frequency as temperatures increase; this option for employers to develop their own work-rest schedule is similar to an option provided in Oregon's heat standards (OR, 2022a; OR, 2022b).

OSHA could also allow employers to use the NIOSH Criteria Document to determine appropriate work-rest schedules.

For all options described above, OSHA is considering the following: 1) periods during which employees are donning and doffing PPE (e.g., coveralls) should not count towards the total time provided for rest breaks; 2) the time for employees to walk to the cool-down and/or shaded area is not included in the time provided for rest breaks (CA, 2005; OR, 2022a; OR, 2022b; CO, 2022); and 3) employers do not need to pay for rest breaks taken during an unpaid meal break, which is consistent with Washington's and Oregon's heat standards (WA, 2009; WA, 2022; WA, 2023; OR, 2022a; OR, 2022b).

Supervision/Observation

Supervision/observation of workers for signs and symptoms of heat-related illness is important so workers who may be experiencing a heat-related illness can be identified quickly and provided appropriate medical treatment. Therefore, OSHA is considering options for supervision/observation that may be included in a standard.

At or above the initial heat trigger (Table 1), OSHA could require employers to maintain effective communication with employees by voice, observation, or electronic means (such as a handheld transceiver, phone, or radio) and provide regular communication. This is similar to the Colorado standard, which requires that whenever a work site temperature is reasonably expected to exceed 80°F, employers must maintain effective communication means with employees (CO, 2022).

At or above the high-heat trigger (Table 1), OSHA is considering two approaches for supervision/observation. The first would require employers to develop and implement a system where

coworkers observe each other for signs and symptoms of heat-related illness, also called a buddy system (using either visual or verbal communication). The other option would require employers to use supervisors to conduct observation of employees (with no supervisor or designee responsible for observing more than 20 employees). OSHA could also take this approach for new or returning workers who may not be acclimatized to working in the heat at or above the initial heat trigger, and/or for all employees during a local heat wave.

These options are aligned with many of the existing state standards. In their standard for outdoor workplaces, California requires that workers be closely observed by a supervisor or designee during a heat wave or the first 14 days of employment if assigned to work in a high heat area (CA, 2005). The Washington ETS and Agriculture standard recommend similar procedures for new and returning workers (WA, 2008b; WA, 2022). With regard to high-heat procedures, the California standard requires employers to maintain effective communication with employees and observe employees for alertness and signs of heat-related illness (through direct observation by a supervisor or designee, mandatory buddy system, regular communication, etc.) (CA, 2005). The standards in Oregon and Washington (ETS and updated) include similar language in their high-heat procedure requirements (OR, 2022a; OR, 2022b; WA, 2022; WA, 2023).

Other Administrative Controls

OSHA has identified other administrative control options that could be implemented, such as adjusting work schedules, providing certain notifications to employees when the high-heat trigger is met or exceeded, and restricting access to excessively hot work areas in indoor environments.

Altering work schedules (i.e., scheduling outside of the typical workday or season) to avoid work during hotter times of the day can control heat stress by reducing employee exposure time or temperature (NIOSH, 2016).

When the high-heat trigger (see Table 1) is met or exceeded, employers could be required to hold pre-shift meetings or otherwise notify employees that high-heat procedures are in effect, encourage employees to stay hydrated, and remind employees of their rights to take rest breaks when needed. For mobile work sites, OSHA could also require employers to notify employees of the location of water, breaks, and cool-down/shaded areas. Employers could also be required to designate employees who would be responsible to call 9-1-1 in a medical emergency and notify all employees who those designated individuals are. California's standard also requires pre-shift meetings before work when the ambient temperature meets or exceeds 95°F (CA, 2005).

For indoor environments, OSHA could require employers to restrict access to excessively high heat areas (e.g., those with ambient temperatures at or above 120°F) by only allowing employees that have been specifically trained to access these areas. The standard could also require that warning signs be placed outside of or near these areas to warn workers of the hazard. These actions are recommended in the NIOSH Criteria document (NIOSH, 2016).

Personal Protective Equipment

Many forms of PPE used to protect workers from workplace hazards may contribute to heat stress. To address this, OSHA is considering two potential requirements. First, OSHA could require employers to take this into consideration when assessing the risks to workers posed by heat (such as during their hazard assessments) and when developing and implementing their HIIPPs. The Agency could also require employers to take additional precautions (such as implementing high-heat procedures) when employees are wearing vapor barrier clothing or an additional protective layer (e.g., coveralls) when a specific trigger is met or exceeded. Colorado's heat standard has a similar requirement for workers wearing these types of PPE (CO, 2022).

PPE designed to provide cooling benefits to workers can assist in reducing the risks of heat-related injury and illness. OSHA's PPE standard, at 29 CFR 1910.132(d)(1), requires employers to "assess the workplace to determine what hazards are present, or are likely to be present, which necessitate the use of PPE. If such hazards are present, or likely to be present, the employer shall select, and have each affected employee use, the types of PPE that will protect the affected employee from the hazards identified in the hazard assessment." OSHA could make explicit that the hazard assessment provision of the existing PPE standard requires employers to consider heat hazards specific to their work site and evaluate the potential use of cooling PPE (such as cooling vests and wetted garments). Alternatively, OSHA could include a standalone, heat-specific requirement in the new standard. Either way, when use of cooling PPE is warranted, cooling properties of the equipment must be always maintained during use.

Medical Treatment and Heat-Related Emergency Response

Medical treatment and emergency response plans can ensure that employers and their employees understand how to respond in an emergency and help prevent heat-related illness from progressing to heat stroke or death. OSHA is considering multiple options for provisions related to medical treatment and emergency response procedures.

OSHA could require employers to have written medical treatment and emergency response procedures describing how they will prepare for and respond to emergency and non-emergency heat-related medical events. Having these procedures in place is important to ensure swift action is taken to protect the health of the affected worker. OSHA could establish minimum requirements for these procedures.

OSHA could require employers to:

- Develop and include communication protocols in their procedures that detail how communication is maintained with employees at work sites and how employees may contact their supervisor and emergency medical services when necessary. Protocols should account for all settings where an employee may be working and exposed to hazardous heat and list the type of communication device(s) employees will use. Modes of communication should be reliable and accessible in all situations. OSHA could require employers to include in these procedures a description of how to transport employees to a location accessible to an emergency medical provider, along with clear and precise directions to the work site, which can be provided to emergency dispatchers. Finally, OSHA could require employers to identify a designated, trained person(s) to ensure that emergency procedures are invoked when appropriate.

- Relieve employees experiencing symptoms of heat illness, closely monitor them while attempting to lower their body temperatures, and determine what other follow-up actions are warranted, such as contacting emergency medical services. Employers should provide sufficient and accessible means to assist employees with reducing their body temperature. This may include taking a rest break in a shaded or cool-down area, fans to circulate the air, loosening or removing clothing, and cold water for the soaking and application of cloths or towels on the body or direct pouring of water onto the body (OSHA, 2014). Employees should continue to rest and be monitored until signs and/or symptoms have resolved and be offered on-site first aid or medical before returning to work or leaving the work site. This is consistent with California's standard, which requires that any employee that shows any sign or reports symptoms of heat illness be offered first aid or medical attention before leaving the work site for home (CA, 2005). If transportation by emergency medical services is necessary, the standard could require that affected employees be cooled down before leaving the work site. Employers would be required to take immediate action to cool down employees with suspected heat stroke. Emergency medical services should be immediately contacted if employees begin to show any signs or report symptoms of severe heat illness, such as confusion, slurred speech, loss of consciousness, seizures, profuse sweating, or hot, dry skin (NIOSH, 2022).

Many states that have enacted (CA, 2005; WA, 2008; WA, 2009; OR, 2022a; OR, 2022b; CO, 2022) or proposed standards (NV, 2022; MD, 2022; CA, 2023; WA, 2023) for heat exposure include requirements for medical treatment and emergency response procedures. Both Colorado and California have implemented standards that specify a length of time an employee must wait until they may return to work (CA, 2005; CO, 2022).

Worker Training

The standard could require employers to institute a training program that is provided to workers and supervisors who work in areas where there is reasonable likelihood of heat exposure. Workplace trainings can better prepare supervisors and workers to stay safe in hot conditions and can help reduce and prevent heat injury and illness. NIOSH also recommends keeping workers and their supervisors informed through training and continuing education programs (NIOSH, 2016).

OSHA could require that the training program for employees cover any or all of the following topics:

- Heat stress hazards
- Different types of heat injury and illness
- Risk factors for heat injury or illness, including the contributions of physical exertion, clothing, PPE, and a lack of acclimatization, as well as the effects of therapeutic drugs, over-the-counter medications, and alcohol
- Common signs and symptoms of heat-related injury and illness and which symptoms require immediate emergency action
- Work site-specific first aid and emergency response procedures for heat-related injuries and illnesses
- Proper precautions for work in hot areas

- The location of shaded/cool-down areas, procedures for ensuring effective observation and communication with employees, and how emergency medical services will be provided in the event of an emergency
- Importance of frequent consumption of small quantities of water when the work environment is hot
- Importance of taking rest breaks to prevent heat-related illness or injury
- Proper use of PPE, and the importance of removing PPE that may impair cooling during breaks
- Description of the employer's acclimatization procedures and the importance of acclimatization
- Employees' responsibilities for following proper work practices and control procedures, including the importance of reporting symptoms of heat-related illness
- A description of the environmental monitoring program at the work site
- Perceptions toward heat stress and common misperceptions
- The location of written training materials

OSHA could require training for supervisors to include any or all of the following topics:

- The topics listed above
- The procedures for implementing the applicable provisions of the rule
- The procedures the supervisor must follow if an employee exhibits signs or symptoms of heat-related illness
- The procedures for environmental monitoring at the work site

OSHA could require that training be conducted in a language and at a literacy level that the employee(s) and supervisor(s) understand. This requirement is consistent with existing heat-specific state standards: Oregon currently requires training to be done in a language and vocabulary readily understood by employees (OR, 2022a; OR, 2022b). Washington requires training in a language the employee and supervisor understands (WA, 2008; WA, 2009; WA, 2022; WA, 2023). In Colorado, for employees who are not fluent in English, employers are required to provide training or written materials in the employee's primary language to fulfill this requirement (CO, 2022). The proposed rule in Maryland also includes a language accessibility requirement for a training program (MD, 2022).

OSHA is considering requiring training to be conducted at certain frequencies, such as: (1) upon hiring and annually after; or (2) upon hiring, annually after, and a refresher course as necessary (e.g., following a heat-related injury or illness at the work site). For indoor employees, employers may be required to conduct training prior to any work in hot environments or near heat-generating processes, annually after that, and a refresher course as necessary (e.g., following a heat-related injury or illness at the work site). OSHA could also require employers to document attendance at heat-related trainings, as Oregon's heat standard requires (OR, 2022a; OR, 2022b).

Minnesota, Oregon, Washington, and Colorado have implemented standards that specify the frequencies at which training should be conducted (MN, 1997; OR, 2022a; OR, 2022b; WA, 2008; WA, 2009; WA, 2022; WA, 2023; CO, 2022). Oregon, Washington, and Colorado specify that the training should be provided annually or at least annually (OR, 2022a; OR, 2022b; WA, 2008; WA, 2009; WA, 2022; WA, 2023; CO, 2022). The Minnesota standard specifies the training should be repeated at intervals not greater than one year (MN, 1997).

The updated rule in Washington requires training for employees prior to work where hazardous heat exposure is reasonably expected and at least annually thereafter (WA, 2023). The rule also specifies the training requirement for outdoor work (WA, 2023). Maryland and Nevada's proposed rule also include a training requirement (MD, 2022; NV, 2022).

Recordkeeping

OSHA is considering requiring employers to maintain additional heat-specific records beyond what is already required by existing recordkeeping standards. The standard could require employers to maintain any or all of the following: environmental monitoring data for a certain period of time; a record of any heat-related illness or injury, including those that only require first aid, and the environmental and work conditions at the time of the illness or injury; and an accurate record of all heat acclimatization for new and returning employees. These records would need to be maintained and made available in accordance with OSHA's Records Access standard (29 CFR 1910.1020).

Additional recordkeeping for heat illness and injury prevention is consistent with several state standards. Oregon requires that employers prepare and maintain written or electronic training records that can be provided upon request (OR, 2022a; OR, 2022b). These records must contain the name or identification of each employee trained, the date(s) of the training, and the name of the person who conducted the training (OR, 2022a; OR, 2022b). In addition, the employers must maintain the most recent annual training record for each affected employee (OR, 2022a; OR, 2022b). In its proposed standard, California is considering requiring employers to establish and maintain accurate records of temperature or heat index measurements which include the date, time, and specific location of all measurements (CA, 2023). In addition, California is considering requiring these records be retained for up to 12 months or until the next measurements are taken, whichever is later, and made available at the worksite to employees and representatives upon request (CA, 2023). These heat-specific recordkeeping measures are also recommended in the NIOSH Criteria Document (NIOSH, 2016).

Communication on Multi-Employer Work Sites

Multi-employer work sites present special challenges due to the need for close coordination across employers on health and safety issues such as training and monitoring safe work practices. Per OSHA's *Recommended Practices for Safety and Health Programs*, "if different employers have inconsistent policies for when and where to wear personal protective equipment, workers may mistakenly believe that the equipment is not needed, leading to injury. Inconsistent safety policies may also cause workers to question the credibility of safety and health programs, resulting in less meaningful employee engagement and participation" (OSHA, 2016).

In several OSHA standards, additional measures are required at multi-employer work sites to protect the health and safety of all employees present at the work site (29 CFR 1910.119, 29 CFR 1910.146, 29 CFR 1910.147, 29 CFR 1910.1200). A multi-employer work site often includes a "host employer" along with "other employers" such as contractors, vendors, temporary staff provided by staffing agencies, and licensed independent practitioners with privileges. Examples of multi-employer work sites include, "electrical or mechanical contractors working in a facility, a vendor installing or maintaining equipment, or long-term contractors providing building cleaning and maintenance" (OSHA, 2016).

This standard could require employers to establish and implement procedures to effectively communicate and coordinate with other employers at the same work site (similar to 29 CFR 1910.119(h)(3)(v), 29 CFR 1910.146(c)(8)(iv)-(v), 29 CFR 1910.146(c)(9)(i)-(ii), 29 CFR 1910.147(f)(2)(i)-(ii), 29 CFR 1910.1200(e)(2)). The purpose of these procedures is to ensure that all employees on a multi-employer work site are aware of and protected from heat-related hazards.

OSHA could require host employers to include a description of procedures to protect all employees on site (e.g., contractors, vendors, staffing agencies, and licensed independent practitioners with privileges) from heat-related hazards (similar to 29 CFR 1910.119(f)(4), 29 CFR 1910.119(h)(2)(iii)-(iv), 29 CFR 1910.146(c)(8)(i)-(iii)), 29 CFR 1910.1200(e)(2)(i)-(iii)). The host employer could also be required to establish procedures to facilitate communication regarding the implementation of the HIIPP between the host employer and other employers on site (similar to 29 CFR 1910.119(h)(2)(ii)-(iv); see also OSHA, 1991).

Lastly, OSHA could require other employers on a multi-employer work site to include a description of how their HIIPP coordinates with that of the host employer.

Section III: Time and Equipment Associated with Potential Elements and Options OSHA is Considering

Unless otherwise noted in this section, the time and equipment estimates for complying with the options OSHA is considering for a potential standard are based on OSHA's professional expertise, considering the hours and equipment necessary to comply with similar requirements in other OSHA standards. In this document, OSHA is preliminarily using the term "designated person" to identify who would perform the described tasks. While this term does not necessarily imply specialized skills or knowledge, certain tasks may require some skills or knowledge. OSHA does not have an estimate of current compliance or baseline compliance with the suggested elements in the Regulatory Framework. The Agency requests small entity representatives' (SERs') feedback on all aspects of these burden estimates.

Heat Injury and Illness Prevention Program

The standard could require that employers create a written Heat Injury and Illness Prevention Program (HIIPP), with the input of employees. (The procedures that should be described in the HIIPP are outlined in the regulatory framework and discussed in Section II of this Background Document.) OSHA acknowledges that some employers will have an existing HIIPP that may only need to be modified to comply with a potential standard.

For employers with an existing HIIPP in place, OSHA assumes that employers will designate someone to review their HIIPP and make any modifications necessary to comply with a potential standard. OSHA estimates this process will require 2.5 hours of the designated person's time. Employers that do not have an existing HIIPP could have two options. Employers could choose to use a HIIPP template provided by OSHA[2] or write a HIIPP from scratch. The Agency estimates that customizing a HIIPP template would require approximately 6 hours of a designated person's time to access OSHA's website, review, determine what sections to use and/or revise, and fill in worksite-specific information on hazards, controls, and procedures. Alternatively, if employers choose to write a HIIPP from scratch, OSHA estimates that it would take 40 hours of a designated person's time to prepare.[3] The Agency expects that most employers would choose the less costly option of utilizing OSHA's template.

Additionally, the standard could require employers to review and update the HIIPP periodically, with the input of employees.[4] Regardless of how employers develop their HIIPPs initially, OSHA estimates that the process of reviewing and updating the HIIPP would take the person designated to do so approximately one hour each time. Where updates to the HIIPP occur more frequently, these updates could take less time.

The standard could also require that employers involve workers in the creation or initial modification of the HIIPP, as well as the process of periodically reviewing and updating of the HIIPP. OSHA assumes that

[2] OSHA does not currently have a HIIPP template but plans, in accordance with past practice, to publish one on its website as part of the rollout of any potential heat standard.
[3] These estimates do not include time for rule familiarization, as the length of the rule has not been determined.
[4] OSHA is considering the following frequency options for reviewing and updating the HIIPP: (1) whenever necessary to ensure its ongoing effectiveness; (2) whenever a heat-related illness or injury occurs; (3) annually; (4) whenever a heat-related illness or injury occurs, but no less than annually.

a representative group of employees will take one hour each during the initial development of the HIIPP and the periodic review and update of the HIIPP to provide feedback, regardless of whether the employer has an existing HIIPP.

Table 3. Compliance Estimates for Heat Injury and Illness Prevention Program

Regulatory Option	Labor Category	Value	Unit	Frequency
Initial HIIPP Development				
Write HIIPP – No Program in Place	Designated Person	40	Hours	One-Time per Establishment
Review and Modify HIIPP – Existing Program in Place	Designated Person	2.5	Hours	One-Time per Establishment
Write HIPP - Use HIIPP Template	Designated Person	6	Hours	One-Time per Establishment
HIIPP Development Involvement – Employee	Employee	1	Hours	One-Time per Employee Participant
Review and Update HIIPP				
Review and Update HIIPP	Designated Person	1	Hours	Per Establishment – Recurring[a]
HIIPP Review and Update Involvement – Employee	Employee	1	Hours	Per Employee Participant – Recurring[a]

[a] Potential options for the frequency of HIIPP updates are as follows: (1) whenever necessary to ensure its ongoing effectiveness; (2) whenever a heat-related illness or injury occurs; (3) annually; (4) whenever a heat-related illness or injury occurs, but no less than annually.

Hazard Identification and Assessment

The standard could require employers to identify if and when heat hazards exist and to monitor the hazard. For outdoor work sites, the standard could require employers to monitor weather conditions to determine when there is a heat hazard. OSHA is considering three options for monitoring weather conditions. The first option would involve a designated person for each work site tracking local forecasts of ambient temperature and humidity provided by the National Weather Service (NWS) (or others) to determine the daily maximum heat index, which the employer would then use to determine which protocols are triggered, if any, to be used throughout the entire working day. OSHA estimates it would take approximately 15 seconds per occurrence to read the daily forecast.

The second and third options would require employers to measure work area conditions. OSHA could require employers to take measurements at or as close as feasible to the work area on days when relevant forecast heat triggers are met or exceeded. The only difference between options two and three is the type of measurements the employer would need to take. The second option would require the employer to designate someone to take measurements of heat index or ambient temperature and humidity to calculate heat index (if needed, using the OSHA-NIOSH Heat Safety Tool App as a calculator or the online calculator available from the NWS). OSHA estimates it would take the designated person 5 minutes each time they measure the heat index or ambient temperature and humidity, including calculating the heat index (e.g., by consulting the OSHA-NIOSH App or NWS's online calculator). The third option would require the employer to designate someone to take measurements of wet bulb globe temperature (WBGT). This option would require the purchase of one WBGT thermometer for each

worksite. Additionally, OSHA estimates the designated person would need 30 minutes to read the WBGT thermometer user manual and 10 minutes per stabilization period and measurement.

Employers with indoor work sites may be required to conduct a hazard assessment to identify the work areas or processes where there is potential for employees to be exposed to hazardous heat, including a determination of whether and when outdoor heat affects indoor temperature/heat index at the work site. OSHA estimates that conducting the hazard assessment would require about 8 hours in total.
If the employer determines that any employee's exposure may equal or exceed relevant initial heat triggers (see Table 1), the employer could be required to develop a monitoring program to identify when employees are exposed to heat at or above the relevant triggers (as part of the HIIPP discussed above). OSHA is considering two options for monitoring conditions in indoor worker settings. These options are the same as options two and three for outdoor worksites discussed above, except that they are not tied to local weather conditions. OSHA estimates that the hours and equipment necessary to comply would be the same. Note that employers could be required to conduct additional monitoring or a new hazard assessment whenever a change in production, process, equipment, or controls has the potential to increase heat exposure.

For both outdoor and indoor work sites, the standard could require employers to consider the contributions of personal protective equipment (PPE) to heat stress.

OSHA is considering permitting an employer to forgo taking measurements if the employer assumes that a work area meets or exceeds both heat triggers. Employers that elect to do this would not incur monitoring costs. These employers would still be required to comply with relevant control measures as though they took a measurement that meets or exceeds the heat triggers.

Table 4. Compliance Estimates for Hazard Identification and Assessment

Regulatory Option	Labor Category	Value	Unit	Frequency
Outdoor – Local Weather Forecast	Designated Person	0.0042	Hours	Per Daily Measurement
Outdoor – Measure Heat Index, OR Measure Ambient Temperature and Humidity and Use Heat Safety Tool App Calculator or NWS Online Calculator	Designated Person	0.0833	Hours	Per Measurement
Outdoor – Measure WBGT	Designated Person	0.1667	Hours	Per Measurement
Indoor – Initial Hazard Assessment	Designated Person	8.0	Hours	One-Time per Establishment
Indoor – Measure Heat Index, OR Measure Ambient Temperature and Humidity and Use Heat Safety Tool App Calculator or NWS Online Calculator	Designated Person	0.0833	Hours	Per Measurement
Indoor – Measure WBGT	Designated Person	0.1667	Hours	Per Measurement
Indoor & Outdoor – Review Monitoring Equipment User Manual	Designated Person	0.5	Hours	One-Time per Employee
Indoor & Outdoor – Monitoring Equipment	N/A	1	Equipment	One-Time per Establishment

Hazard Prevention and Control Measures

OSHA could require employers to implement some combination of engineering and administrative controls.

Engineering Controls

The standard could require employers to implement engineering controls when the temperature is at or above the initial heat trigger.

For outdoor workplaces, OSHA is considering requiring employers to provide employees with a cool-down area. Options include employers providing cooling or misting fans; artificial or natural shade; air-conditioned spaces (e.g., trailers, vehicles, structures); or any combination of these measures. Cooling or misting fans might be used alone or in combination with natural or artificial shade. One example of artificial shade is a 12x12 foot tent that all employees on break can reasonably access. Combining shade with cooling or misting fans might entail one cooling or misting fan per 12x12 foot cooling station (tent or natural shade). Employers that make air-conditioned spaces available would need to provide specific AC tonnage dependent on the number of employees at the worksite.[5] Table 5 below presents the AC tonnage expected to cool a structure for the midpoint number of employees in the establishment size class listed (for the 500-plus size class, the estimate presents expected AC tonnage for 500 employees exactly). These AC tonnage estimates do not represent the potential AC tonnage needed for instances where a vehicle is used as a cool-down area. OSHA assumes employers will not purchase vehicles to use as cool-down areas given there are likely less costly options to cool more employees at once; however, if an employer does use vehicles as cool-down areas, there must be sufficient space for the number of employees present and OSHA assumes one vehicle per four employees would be needed.

For indoor workplaces, as for outdoor work sites, OSHA has identified the provision of a cool-down area (e.g., break room or trailer) as a possible engineering control. This space could be air-conditioned or have some combination of air movement and humidity control. Another option OSHA is considering for indoor work sites is the provision of work area controls. Employers could be required to provide increased air movement within a work area; some combination of increased air movement and humidity control within a work area; or, when feasible, air-conditioned work areas or control booths. For workstations, OSHA could require that employers purchase one desktop or wall mount fan per workstation. Employers could also purchase dehumidifiers or use the humidity controls built in to air-conditioning systems to address humidity levels. The number of dehumidifiers required would depend on several factors, including room volume, relative humidity, type of dehumidifier, class of water to be removed, and pints per day removal capacity.

For employer-provided vehicles, OSHA is also considering engineering control options. Options include air-conditioning or other cooling mechanisms in the passenger space of employer-provided vehicles, either in areas where temperatures regularly are above the high-heat trigger or when employees spend the majority of their shifts working in or from vehicles. OSHA estimates that, where this requirement applies, each employer who provides vehicles lacking air-conditioning or another cooling mechanism would need to install a cooling mechanism in one vehicle for every 2 employees on average.

[5] Square footage requirements are based on A-Wall Building Systems: https://a-wall.com/space-planning-sizes/, Tonnage requirements are calculated using Learn Metrics: https://learnmetrics.com/ac-tonnage-calculator/#:~:text=%E2%80%9C%E2%80%A6an%20air%20conditioner%20generally%20needs,0.0016%20tons%20per%20square%20foot.

Table 5. Compliance Estimates for Hazard Prevention and Control Measures – Engineering Controls

Regulatory Option	Labor Category	Value by Establishment Size Class						Unit	Frequency
		0-4	5-9	10-19	20-99	100-499	500+		
Outdoor – Cooling or Misting Fans	N/A	1	1	1	1	1	1	Fans	One-Time per Cooling Station (12x12ft area)
Outdoor – Artificial Shade	N/A	1	1	1	1	1	1	12x12 tent	One-Time per Establishment
Outdoor – AC Tonnage	N/A	0.15	0.20	0.28	0.75	3.25	5.33	Tonnage	One-Time per Establishment
Indoor – Cooled Workstation	N/A	1	1	1	1	1	1	Fans	One-Time per Workstation
Indoor – Cooled Break Room (AC Tonnage)	N/A	0.15	0.20	0.28	0.75	3.25	5.33	Tonnage	One-Time per Establishment
Employer Provided Vehicles – Installation of Cooling Mechanism	N/A	1	4	8	30	150	250	Vehicle Cabs	One-Time per Establishment

For radiant heat from fixed sources in indoor workplaces, OSHA is also considering requiring employers to use any of the options in the following Table 6 to reduce exposure, to the extent feasible. Each option would require staff time (e.g., engineer, maintenance/facilities) to design/redesign, install, test options, and purchase necessary technology or equipment.

Table 6: Description of Various Engineering Controls for Reducing Exposure to Radiant Heat in Indoor Workplaces

Control	Description of Control
Local exhaust ventilation (LEV) at heat-generating sources	• LEV designed and installed at points of high heat or moisture production (such as exhaust hoods in laundry rooms or steam presses, commercial kitchen exhaust hoods). • Similar to LEV used to capture air contaminants. Dampeners and hood vary depending on the moisture level of the air.
Installation of waste heat recovery technology	• Used with LEV to convert heat to energy fed back into the system. Regenerative and recuperative burners capture and use the waste heat from the hot flue gas from the combustion process. Tube heat exchangers that recover low to medium waste heat are mainly used for heating liquids.
Isolating the source of radiant heat	• Process enclosures around heat-producing components. • Containment of heat-producing equipment in rooms without workers.
Shielding or barriers that are radiant-reflecting or heat-absorbing	• Shielding to stop radiant heat from reaching workstations. Reflective Shield: Stainless steel, aluminum, or other bright metal surfaces reflect heat back toward the source. Absorbent shields: Water-cooled jackets made of black-surfaced aluminum absorb and carry away heat.
Thermal insulation on hot surfaces (e.g., steam pipes)	• Reducing the radiant heat emission from hot surfaces: Covering hot surfaces with sheets of low-emissivity material or paint reduces the heat radiating from this hot surface into the workplace. • Insulating hot surfaces: Insulation reduces the heat exchange between the heat source and the work environment.
Increasing the distance between workers and the heat source	• Moving the workstation further away from the heat source. • Repositioning controls to a cooler location.
Modifying the hot process or operation	• Would be very specific to individual workplaces but could involve such changes as re-piping or revamping existing systems.

Administrative Controls

The standard could require administrative controls including drinking water, protections for unacclimatized workers, rest breaks, and supervision/observation of workers for signs and symptoms of heat-related illness. The following are options for administrative controls that OSHA is considering.

Provision of Drinking Water

Employers could be required to provide access to one quart (32 fluid ounces) of suitably cool drinking water per employee per hour for the entire shift. To comply with this requirement at outdoor work sites, OSHA assumes employers would purchase 40-quart water coolers (with spigots) sufficient to provide the required amount of water. For indoor workplaces, OSHA assumes employers would utilize a plumbed water dispenser to comply with this requirement. Employers are assumed to purchase one reusable water bottle for both workplace types per employee. Table 7 below presents the expected number of 40-quart water coolers and water bottles for each establishment size class given the number of employees equals the midpoint of the employee range for that size class (except for the 500-plus size class, for which OSHA calculated the number of coolers and water bottles given the establishment has 500 employees).

Table 7. Compliance Estimates for Hazard Prevention and Control Measures – Administrative Controls

Regulatory Option	Labor Category	Value by Establishment Size Class						Unit	Frequency
		0-4	5-9	10-19	20-99	100-499	500+		
Outdoor – Coolers with spigot	N/A	1	1	1	2	8	13	40 qt coolers	One-Time per Establishment
Indoor – Plumbed Water Dispenser	N/A	1	1	1	1	1	1	Plumbed Water Dispensers	One-Time per Establishment
Indoor & Outdoor – Reusable Water Bottle	N/A	2	7	15	60	300	500	Reusable Water Bottles	One-Time per Employee

Protections for Unacclimatized Workers

The standard could require employers to adopt protections for new and returning employees who may not be acclimatized to working in the heat at or above the initial heat trigger, as well as all employees (new, returning, existing) during local heat waves.

OSHA is considering four options that could apply to new and returning employees, as well as all employees during local heat waves. First, OSHA could require employers to provide heat hazard awareness training before work begins and increase monitoring and communication from the supervisor/designated person for the first week. The second option OSHA is considering would require employers to develop their own acclimatization protocol based on the work tasks performed by workers, clothing/PPE worn, and environmental risk factors. The third option OSHA is considering would require employers to follow the high-heat procedures (discussed in the *High-Heat Procedures* section below) at the initial heat trigger for the first week of work.

A fourth option OSHA is considering is to require employers to implement an acclimatization schedule specified by OSHA, which would differ between new and returning employees. As with the other options, during local heat waves, employers could choose to implement the schedule for returning workers for existing employees. (The details of the acclimatization schedules OSHA is considering for this option are outlined in the regulatory framework and discussed in Section II of this Background Document.) Note that the amount of work time actually lost due to acclimatization will be tempered by the fact that workers may be able to complete other tasks during periods at or above the initial heat trigger so long as they are not working in those conditions. OSHA estimates that workers, on average, would spend 50% of their non-heat exposed time during acclimatization on tasks in non-heat exposed work conditions.

The number of hours necessary for an employer to comply with any potential acclimatization protection requirements would vary depending on the option(s) OSHA includes in any standard and, for the options requiring employers to develop a plan/protocol, the plan/protocol the employer implements. Table 8 below presents estimates for the first, second, and fourth potential options described above.

For the first option, a plan with heat hazard awareness training and a week of increased monitoring and communication, estimates for heat hazard awareness training are presented in *Training* section below. OSHA estimates that the increased monitoring and communication for the first option will require 20 minutes per 8-hour shift per employee and supervisor for the first week. For the second option, the estimate of lost hours per employee per acclimatization protocol range from 2 hours for returning workers and 4 hours for new workers. For the third option, where employers follow the high-heat procedures at the initial heat trigger for the first week of work, estimated time required per employee and supervisor are presented in *High-Heat Procedures* section below. For the fourth option, OSHA estimates that the number of lost hours per employee undergoing acclimatization ranges from 4 hours for returning workers to 8 hours for new workers, which includes an adjustment of 50% for non-heat exposed time during acclimatization.

Table 8. Compliance Estimates for Hazard Prevention and Control Measures – Acclimatization

Regulatory Option	Labor Category	Value	Unit	Frequency
Increased monitoring and communication - Supervisor per 20 Workers	Designated Person	0.3333	Hours	Per Designated Person Per 8- Hour Shift During Acclimatization
Increased monitoring and communication - Supervisor per 20 Workers	Employee	0.0167	Hours	Per Employee Per 8-Hour Shift During Acclimatization
New workers follow employer-developed protocols based on the work tasks performed by workers, clothing/PPE worn, and environmental risk factors.	Employee	4.0	Hours	Per Employee During Acclimatization Protocol
Returning workers (and existing workers during heat waves) follow employer-developed protocols based on the work tasks performed by workers, clothing/PPE worn, and environmental risk factors	Employee	2.0	Hours	Per Employee During Acclimatization Protocol
New workers exposed to heat only 20 percent of normal duration on the first day. Work duration increased by no more than 20 percent on subsequent days until the worker performed a normal schedule (5 days).	Employee	16 x 50% = 8	Hours	Per Employee During Acclimatization Schedule
Returning workers (and existing workers during heat waves) spend no more than 50% of the usual duration of work in the hot environment on day 1, 60% on day 2, 80% on day 3, and 100% on day 4.	Employee	8.8 x 50% = 4.4	Hours	Per Employee During Acclimatization Schedule

Rest Breaks

The standard could require that employers provide their workers with rest breaks once the initial heat trigger is met or exceeded. (Potential rest break requirements at or above the high-heat trigger are discussed in the *High-Heat Procedures section* below.) At or above the initial heat trigger, OSHA is considering the following options for rest breaks:

- Require employers to allow and encourage workers to take rest breaks as needed to prevent overheating. OSHA does not have an exact time estimate but estimates, for most workplaces, that the total break time per worker would average less than 10 minutes every 2 hours (for a total of 40 minutes per 8-hour shift).
- Require employers to provide 10-minute breaks for every 2 hours worked (for a total of 40 minutes per 8-hour shift).

Table 9. Compliance Estimates for Hazard Prevention and Control Measures – Rest Breaks

Regulatory Option	Labor Category	Value	Unit	Frequency
Above Initial Heat Trigger - Break Time Based on as Needed Time	Employee	<0.6667	Hours	Per Employee per 8-Hour Shift When Initial Heat Trigger is Met or Exceeded
Above Initial Heat Trigger - Break Time of 10 Minutes Every 2 Hours	Employee	0.6667	Hours	Per Employee per 8-Hour Shift When Initial Heat Trigger is Met or Exceeded

Supervision/Observation of Workers

Employers may be required to maintain effective communication with employees whenever the initial heat trigger is met or exceeded. (Potential supervision/observation requirements at or above the high-heat trigger are discussed in the *High-Heat Procedures* section below.) OSHA assumes that employers would task a designated person to stay in communication with employees. OSHA estimates this activity would require, on average, 5 minutes of the designated person's time per check-in every 2 hours (20 minutes total per 8-hour shift). In addition, each employee would spend one minute per 8-hour shift checking in with the designated person.

Table 10. Compliance Estimates for Hazard Prevention and Control Measures – Supervision/Observation of Workers

Regulatory Option	Labor Category	Value	Unit	Frequency
Effective Communication - Working in Group	Designated Person	0.3333	Hours	Per Designated Person per 8-Hour Shift When Initial Heat Trigger is Met or Exceeded
Effective Communication - Working in Group	Employee	0.0167	Hours	Per Employee per 8-Hour Shift When Initial Heat Trigger is Met or Exceeded

Other Administrative Controls

For indoor workplaces, employers could restrict access to excessively high heat areas and place warning signs near these areas. This control would require one heat surveillance flag or sign per door for each high heat area, which OSHA estimates would take a designated person 5 minutes to install. Additional administrative controls when the high-heat trigger is met or exceeded are discussed in the *High-Heat Procedures* section below.

Personal Protective Equipment

The standard could require employers to consider heat hazards and evaluate the potential use of cooling PPE. The types of cooling PPE might include, for example, durags, neck wraps, and cooling vests that can be soaked before donning. OSHA assumes that employers would need to provide one of each per employee. OSHA estimates employees could spend 30 seconds soaking/resoaking durags and neck wraps every 4 hours and 5 minutes soaking/resoaking cooling vests every 6–7 hours.

When employees are required to wear vapor barrier clothing or an additional layer (e.g., coveralls), OSHA is also considering requiring employers to take additional precautions (such as implementing high-heat procedures) when a specific trigger is met or exceeded. OSHA's estimate of the number of hours necessary to comply with potential high-heat procedures can be found in the *High-Heat Procedures* section below.

High-Heat Procedures

When high-heat triggers are met or exceeded, OSHA could require controls related to rest breaks, worker supervision/observation, and employee notice requirements. For rest breaks, OSHA is considering two options:

- Requiring employers to provide a minimum of 15 minutes of rest break at least every two hours (for one hour of total break time per worker per 8-hour shift).
- Requiring employers to design their own rest break schedule. OSHA estimates that this schedule would be equal to a minimum of 15 minutes every two hours and increasing break duration and/or frequency as temperatures increase.

For worker supervision/observation at or above the high-heat trigger, OSHA is considering two options. The first would require employers to establish buddy systems for observing through visual or verbal communication. OSHA estimates this activity would require one minute per check-in every 2 hours (4 minutes total per 8-hour shift) for all employees. The other option would require employers to use supervisors to conduct observation of employees (with one supervisor or designee responsible for observing no more than 20 employees). OSHA estimates this option would require 5 minutes of the designated person's time per check in every 2 hours (20 minutes total per 8-hour shift).

When the high-heat trigger is met or exceeded, OSHA is also considering requiring employers to hold pre-shift meetings or otherwise notify employees of the following:

- High-heat procedures are in effect
- Encouraging employees to drink plenty of water
- Reminding employees of their rights to take rest breaks as needed
- Location of shade and/or cool-down areas, breaks, and water for mobile work sites
- Designating employees to call 9-1-1 in a medical emergency

OSHA estimates this option would require 10 minutes of a designated person's time to conduct the pre-shift meeting or otherwise provide notice to employees, and require 10 minutes per employee (e.g., to attend the meeting).

Table 11. Compliance Estimates for High-Heat Procedures

Regulatory Option	Labor Category	Value	Unit	Frequency
Rest Breaks - Above High-Heat Trigger - Break Time of 15 Minutes Every 2 Hours	Employee	1.00	Hours	Per Employee per 8-Hour Shift When High Heat Trigger is Met or Exceeded
Rest Breaks - Above High-Heat Trigger - Employers Design Their Own Rest Schedule	Employee	1.00	Hours	Per Employee per 8-Hour Shift When High Heat Trigger is Met or Exceeded
Worker Supervision/Observation - Observation by Supervisor	Supervisor or Designated Person	0.3333	Hours	Per Supervisor/Designated Person per 8-Hour Shift When High Heat Trigger is Met or Exceeded
Worker Supervision/Observation - Observation by Supervisor	Employee	0.0167	Hours	Per Employee per 8-Hour Shift When High Heat Trigger is Met or Exceeded
Worker Supervision/Observation - Buddy System	Employee	0.0667	Hours	Per Employee per 8-Hour Shift When High Heat Trigger is Met or Exceeded
Pre-Shift Meeting or Other Notification	Designated Person	0.1667	Hours	Per Designated Person per 8-Hour Shift When High Heat Trigger is Met or Exceeded
Pre-Shift Meeting or Other Notification	Employee	0.1667	Hours	Per Employee per 8-Hour Shift When High Heat Trigger is Met or Exceeded

Medical Treatment and Heat-Related Emergency Response

OSHA could require employers to have written medical treatment and emergency response procedures that outline how they will prepare for and respond to emergency and non-emergency heat-related medical events. OSHA is also considering including requirements related to how employers would need to respond to reported or observed signs and symptoms of heat illness, including requiring immediate action appropriate to the severity of the illness. (Details about the options OSHA is considering are outlined in the regulatory framework and discussed in Section II of this Background Document.)

To develop written medical treatment and emergency response procedures, OSHA assumes that employers would task a designated person with writing up these procedures (as part of the HIIPP discussed in the *Heat Injury and Illness Prevention Program* section above). OSHA could also require employers to designate a person for each shift who will ensure that emergency procedures are activated and adhered to fully and appropriately in response to reported or observed signs and symptoms of heat illness (e.g., relieving any employee who is exhibiting signs of heat illness from duty and ensuring they are closely monitored). OSHA estimates that monitoring employees with signs or symptoms of heat illness would require 45 minutes of the designated person's time per incident.

When an employee is suspected of severe heat illness, the standard could require immediate action to reduce body temperature. OSHA estimates this would take 12.5 minutes per incident, accompanied by an immediate call to emergency medical services (EMS) taking an estimated 2 minutes. For any off-roadway employee that needs EMS, a designated person will spend an estimated 40 minutes transporting[6] the employee to a location where EMS can reach them. Finally, OSHA could require employers to have a way to reduce an employee's body temperature when necessary. This could be done by pouring water and ice directly on the employee, requiring a minimum of 15 pounds of ice and water assumed to be available at the work site. Alternatively, body temperature could be reduced by having one tub of sufficient size to accommodate a reclining adult and a minimum of 15 pounds of ice to fill the tub per incident.

[6] This time estimate includes time for the designated person to return to the worksite.

Table 12. Compliance Estimates for Medical Treatment and Emergency Response

Regulatory Option	Labor Category	Value	Unit	Frequency
Medical Response (Minor/Moderate) – On-Site Medical Treatment and Monitoring	Designated Person	0.75	Hours	Per Incident
Medical Response (Severe) – On-Site Medical Treatment	Designated Person	0.2083	Hours	Per Incident
Medical Response (Severe) – Tub	One-Time	1	Tubs	One-Time per Establishment
Medical Response (Severe) - Ice to Pour Over Employee or to Fill Tub	Per Employee/Incident	15	Pounds of Ice	Per Incident
Ice Cooler	One-Time	2	45 Quart Coolers[a]	One-Time per Establishment
Medical Response (Severe) – Contact Emergency Medical Services	Designated Person	0.0333	Hours	Per Incident
Transport of Worker to Location Where EMS Can Reach Them	Designated Person	0.6667	Hours	Per Incident

[a] A 45 Quart Cooler holds 37 lbs. of ice.

Worker Training

The standard could require employers to develop and implement a training program for workers and supervisors. Training could be required at certain frequencies, such as initially (e.g., upon hiring) and then refresher training annually and/or when necessary (e.g., following each heat-related incident at the work site).[7] OSHA assumes the training program would be developed and implemented by a designated person. OSHA acknowledges that some employers have existing training programs and those programs may already include heat stress related training, which would impact the amount of time the designated person would need to develop and implement the training requirements of any proposed standard. (The specific topics OSHA is considering requiring employers to cover in their training programs are outlined in the regulatory framework and discussed in Section II of this Background Document.)

For employers with no existing training program, OSHA estimates a designated person would spend 7 hours developing the initial employee training program, 1 hour preparing for the initial employee training sessions, and 2 hours administering each initial training session. OSHA estimates that a designated person would spend 1 hour preparing for the refresher employee training(s) and 1 hour conducting each refresher employee training. Finally, OSHA estimates that all employees would spend 2 hours each for the initial employee training and 1 hour each for every refresher employee training.

In addition, for training of supervisors, OSHA estimates that a designated person would spend 16 hours developing the initial supervisor training, 4 hours preparing the initial supervisor training, and 8 hours per session to deliver the initial supervisor training. OSHA estimates each supervisor would spend 8 hours attending the supervisor training. For supervisor refresher training, OSHA estimates that a designated person would spend 2 hours preparing for the refresher training, and 4 hours conducting the refresher training. Each supervisor would spend 4 hours attending the supervisor refresher training.

[7] For indoor workers, OSHA is considering requiring trainings prior to any work in hot environments or near heat-generating processes, as well as refresher trainings annually and as necessary.

For those employers with existing training programs, OSHA bases its estimate of the incremental time required to modify existing programs on burden estimates developed by the RAND Corporation (Metz et al., 2021) for the Proposed California Regulation for Heat Illness Prevention in Indoor Places of Employment. Based on those burden estimates, OSHA estimates that a designated person would spend 5.5 hours modifying the existing training program to comply with any training provisions in an OSHA standard, 15 additional minutes preparing for the first modified training session(s), and 30 additional minutes per session administering the initial training, compared to their existing program. OSHA also estimates that a designated person would spend 7.5 additional minutes preparing for the refresher training and 15 additional minutes conducting each refresher training. Finally, OSHA estimates all employees would spend 30 additional minutes each for the initial training and 15 additional minutes each for every refresher training. Note that this estimate is for training in addition to the existing training.

In addition, for those employers with existing training programs for supervisors, OSHA estimates that a designated person would spend 11 hours modifying supervisor training, 0.5 additional hours preparing for the supervisor training, and one additional hour per session to deliver the supervisor training. Any supervisor would spend an estimated one additional hour attending the supervisor training. For supervisor refresher training, OSHA estimates that a designated person would spend an additional 15 minutes preparing for the refresher training, and an additional 30 minutes conducting the refresher training. Each supervisor would spend an additional 30 minutes attending the supervisor refresher training.

OSHA also could require documentation of heat-related training attendance. OSHA assumes the designated person would record attendance and estimates that it will take five minutes per session to record attendance of each heat-related training session.

Table 13. Compliance Estimates for Worker Training

Regulatory Option	Labor Category	Value	Unit	Frequency
No Program in Place				
Initial Employee Training				
Initial Employee Training Program Development	Designated Person	7	Hours	One-Time per Establishment
Prep Time for Initial Employee Training	Designated Person	1	Hours	One-Time per Establishment
Conducting Initial Employee Training	Designated Person	2	Hours	One-Time per Session
Undergoing Initial Employee Training	Employee	2	Hours	One-Time per Employee
Initial Supervisor Training				
Initial Supervisor Training Development	Supervisor or Designated Person	16	Hours	One-Time per Establishment
Prep Time for Initial Supervisor Training	Supervisor or Designated Person	4	Hours	One-Time per Establishment
Conducting Initial Supervisor Training	Supervisor or Designated Person	8	Hours	One-Time per Session
Undergoing Initial Supervisor Training	Supervisor or Designated Person	8	Hours	One-Time per Supervisor/Designated Person
Refresher Employee Training				
Prep Time for Refresher Employee Training	Designated Person	1	Hours	Per Establishment – Recurring[a]
Conducting Refresher Employee Training	Designated Person	1	Hours	Per Session – Recurring[a]
Undergoing Refresher Employee Training	Employee	1	Hours	Per Employee – Recurring[a]
Refresher Supervisor Training				
Prep Time for Refresher Supervisor Training	Supervisor or Designated Person	2	Hours	Per Establishment – Recurring[a]
Conducting Refresher Supervisor Training	Supervisor or Designated Person	4	Hours	Per Session – Recurring[a]
Undergoing Refresher Supervisor Training	Supervisor or Designated Person	4	Hours	Per Supervisor/Designated Person – Recurring[a]
Training-Related Recordkeeping				
Record Attendance of Heat-Related Trainings	Designated Person	0.0833	Hours	Per Session
Existing Program in Place				
Initial Employee Training				
Initial Employee Training Program Development	Designated Person	5.5	Hours	One-Time per Establishment
Prep Time for Initial Employee Training	Designated Person	0.25	Hours	One-Time per Establishment
Conducting Initial Employee Training	Designated Person	0.5	Hours	One-Time per Session
Undergoing Initial Employee Training	Employee	0.5	Hours	One-Time per Employee
Initial Supervisor Training				
Initial Supervisor Training Development	Supervisor or Designated Person	11	Hours	One-Time per Establishment

Table 13. Compliance Estimates for Worker Training

Regulatory Option	Labor Category	Value	Unit	Frequency
Prep Time for Initial Supervisor Training	Supervisor or Designated Person	0.5	Hours	One-Time per Establishment
Conducting Initial Supervisor Training	Supervisor or Designated Person	1	Hours	One-Time per Session
Undergoing Initial Supervisor Training	Supervisor or Designated Person	1	Hours	One-Time per Supervisor/Designated Person
Refresher Employee Training				
Prep Time for Refresher Employee Training	Designated Person	0.125	Hours	Per Establishment – Recurring[a]
Conducting Refresher Employee Training	Designated Person	0.25	Hours	Per Session – Recurring[a]
Undergoing Refresher Employee Training	Employee	0.25	Hours	Per Employee – Recurring[a]
Refresher Supervisor Training				
Prep Time for Refresher Supervisor Training	Supervisor or Designated Person	0.25	Hours	Per Establishment – Recurring[a]
Conducting Refresher Supervisor Training	Supervisor or Designated Person	0.5	Hours	Per Session – Recurring[a]
Undergoing Refresher Supervisor Training	Supervisor or Designated Person	0.5	Hours	Per Supervisor/Designated Person – Recurring[a]
Training-Related Recordkeeping				
Record Attendance of Heat-Related Trainings	Designated Person	0.0833	Hours	Per Session

[a] Potential options for the frequency of refresher training are as follows: (1) Annually, and a refresher course as necessary (e.g., following a heat-related injury or illness at the work site); (2) Annually.

Recordkeeping

OSHA could require employers to keep records on environmental monitoring data, a record of any heat-related illness or injury, and/or an accurate record of all heat acclimatization for new and returning employees. OSHA assumes that employers would task a designated person to record environmental monitoring data and estimates that person would spend 5 minutes per measurement to take heat recordings using measurement equipment such as a heat index monitor. OSHA also assumes employers will task a designated person to record the other two employee-based recordkeeping requirements (heat-related illness or injury and heat acclimatization). OSHA estimates that person would spend 5 minutes per employee recording heat-related illness or injury and 10 seconds per employee recording acclimatization each time.

Table 14. Compliance Estimates for Recordkeeping

Regulatory Option	Labor Category	Value	Unit	Frequency
Environmental Heat Recording – Using Facility Measurement	Designated Person	0.0833	Hours	Per Measurement
Environmental Heat Recording – Using NWS	Designated Person	0	Hours	Per Daily Measurement
Recording Heat-Related Illness or Injury	Designated Person	0.0833	Hours	Per Incident
Recording Heat Acclimatization	Designated Person	0.0028	Hours	Per Employee Per Entry

Communication on Multi-Employer Sites

The standard could require employers to establish and implement procedures to effectively communicate and coordinate with other employers at the same worksite. The requirements OSHA is considering for communication on multi-employer worksites are described in the regulatory framework and in Section II of this Background Document. If OSHA were to include these requirements in any standard, OSHA assumes the host employer and other employers at a multi-employer worksite would task a designated person to develop these procedures. OSHA estimates the individual the host employer designates would need 20 minutes to develop and record (1) procedures to protect all employees on-site from heat-related hazards and (2) procedures to facilitate communication regarding the implementation of the HIIPP between the host employer and other employers on-site. OSHA estimates that other employers at the worksite would have a designated person spend 10 minutes developing a description of how their HIIPP coordinates with the host employer's.

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Appendix A: Description of Any Duplicative, Overlapping, or Conflicting Rules

The Regulatory Flexibility Act (RFA) requires that the agency's initial regulatory flexibility analysis identify, "to the extent practicable, [] all relevant Federal rules which may duplicate, overlap or conflict with the proposed rule." 5 U.S.C. § 603(b)(5). The Small Business Regulatory Enforcement Fairness Act (SBREFA) requires the agency to collect advice and recommendations from the SERs on this issue. 5 U.S.C. § 609(b)(4). Below, OSHA discusses whether the rules it has identified would duplicate, overlap, or conflict with the options for a potential standard as outlined above. While some federal rules may have overlapping requirements, OSHA did not identify any rules that would conflict with any potential standard. The agency therefore believes that no federal rules would prevent compliance with the potential standard.

Other Federal Agency Rules

The first federal rules that OSHA identified are regulations promulgated by the Environmental Protection Agency (EPA) under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), 7 U.S.C. § 136 et seq. The Worker Protection Standard (WPS) (40 CFR Part 170) is designed to protect agricultural workers from "unreasonable adverse effects of pesticides" (80 FR 67496); however, there are some provisions of the WPS addressing heat hazards associated with PPE use required by that standard. The WPS requires that employers implement "appropriate" or "sufficient" measures to prevent heat-related illness when workers must wear personal protective equipment (PPE) because of pesticide exposure (40 CFR 170.507, 170.605). The WPS also requires employers to ensure pesticide handlers are trained on how to recognize, prevent, and provide first aid treatment for heat-related illnesses (40 CFR 170.501). Although there may be some overlap between these requirements and some elements of a potential standard (e.g., training and consideration of the contributions of PPE to heat stress), OSHA is not aware of any conflicts. The potential rule would be entirely consistent with EPA's requirements around PPE considerations and training for pesticide handlers. Indeed, EPA's WPS "How to Comply" manual refers employers to OSHA's heat stress webpage for further information on what protective measures are appropriate (see Chapter 4, p. 65, available here). Additionally, the WPS, designed to protect workers from pesticide exposure, does not obviate the need for OSHA's potential standard, designed to protect workers from hazardous heat. A multitude of factors, including PPE, can contribute to heat injury and illness.

The second set of federal rules that OSHA identified are Department of Transportation (DOT) regulations. The Federal Motor Carrier Safety Administration (FMCSA) requires drivers of vehicles with gross vehicle weight ratings of 26,001 pounds or more to be instructed about extreme driving conditions, including high heat, to obtain commercial driver's licenses (49 C.F.R. Part 380). FMCSA's

regulations might overlap with OSHA's potential rule to the extent they require some training for a limited group of individuals. However, these regulations would not conflict with OSHA's potential rule, nor do they obviate the need for a comprehensive OSHA standard with provisions specifically designed to protect workers exposed to broad range of hazardous heat conditions.

OSHA Standards

OSHA does not have any standards that specifically cover workplace exposure to hazardous heat. However, OSHA has identified some current standards applicable to some issues related to hazardous heat. These standards, described below, do not conflict with the potential rule, nor do they obviate the need for an OSHA standard addressing occupational exposure to hazardous heat.

The first set of standards OSHA identified are the field sanitation standards (29 CFR 1910.141, 1926.51, 1915.88, 1917.127, 1918.95, 1928.110). Among other things, these standards require employers to provide employees with readily accessible potable drinking water and access to toilet facilities. The field sanitation standard for agriculture also requires employers to notify employees of the location of water and the importance of drinking water frequently, especially on hot days (29 CFR 1928.110(c)(4)). These existing standards and the options for a potential rule, as outlined above, do not conflict, nor do these existing standards obviate the need for a heat-specific standard. While OSHA's field sanitation standards require employers to make drinking water available to employees, their primary purpose is to ensure sanitary conditions in the workplace and they do not include the same level of specificity for provision of water as the options proposed above (e.g., specific quantity of water to be provided).

The second set of standards OSHA has identified are specific to pulp and paper and textile mills. These standards require that exposed water pipes that carry either steam or hot water and are located close to working platforms be guarded to prevent contact (29 CFR 1910.261(k)(11), 1910.262). These standards are primarily concerned with burn and scalding-related hazards to employees. However, when employers guard these pipes by using insulating material, they may also help protect their workplace from increases in temperatures that may, in some cases, induce heat-related illnesses. Thus, the existing standards and the potential standard would be complementary in nature.

The third set of standards OSHA has identified are OSHA's PPE standards (29 CFR 1910.132, 29 CFR 1915.152, 29 CFR 1917.95, and 29 CFR 1926.28). These standards require employers to conduct a hazard assessment to determine the appropriate PPE to be used to protect employees from the hazards identified in the worksite hazard assessment. Hazardous heat is not specifically identified as a hazard for which workers need PPE, though hazardous heat may be identified as a workplace hazard by an employer. These standards and the options for a potential heat standard are not conflicting or

duplicative in nature, as the proposed hazard-specific requirements would supplement any existing requirements.

The fourth set of standards that OSHA has identified are two broadly applicable standards that may apply to some heat-related hazards—the Recordkeeping standard (29 CFR 1904.7) and the Safety Training and Education standard for construction (29 CFR 1926.21). OSHA's Recordkeeping standard requires employers to record and report injuries and illnesses that meet recording criteria. However, if an injury or illness does not require medical treatment beyond the provision of first aid, it does not need to be reported. Some actions that a worker may be recommended to take when experiencing heat-related illness, such as hydration, are considered to be first aid, and therefore are not recordable. OSHA's Safety Training and Education standard requires employers in the construction industry to train employees in the recognition, avoidance, and prevention of unsafe conditions in their workplaces. However, the standard does not specifically identify hazardous heat as a hazard for which workers need training nor does it establish heat-specific training requirements.

These standards might, in some cases, overlap with some of the proposed options above. However, they do not conflict. OSHA believes that a comprehensive standard addressing heat-related illness would help ensure that all employers take all appropriate measures to protect workers from the hazards associated with exposure to hazardous heat. Where a heat standard includes specific requirements that overlap with more general requirements in other existing standards, the specific requirements would apply in lieu of the more general requirements, unless otherwise noted (see 29 CFR 1910.5(c)(1)). Where other standards, specific or general, continue to apply, OSHA will ensure that they supplement, rather than conflict with, the requirements of the heat standard. If OSHA finds, through the rulemaking process, that a standard as outlined in the regulatory framework would conflict with an existing standard's requirements or is unclear, it will take action, through the rulemaking, to correct the conflict or clarify confusing provisions. OSHA will seek comment during the SBAR process and throughout the rulemaking on any potential conflicts or confusing provisions.

Appendix B: Profile of Core Industries

OSHA broadly characterizes industries that are potentially within the scope of the regulatory framework as core industries and all other covered industries. Core industries are industries where workers are considered to have an elevated risk of exposure to heat stress. The core industries are outlined in this section with descriptions of the types of work that expose workers to heat-related hazards, such as exposure to high outdoor temperatures, exposure to radiant heat sources, or insufficient ventilation. While the risk of worker exposure to heat-related hazards is expected to be higher in the core industries, OSHA acknowledges that workers in all other industries within the Agency's jurisdiction have the potential to experience occupational heat-related hazards. For example, there are certain jobs, regardless of the industry in which they are performed, in which necessary physical exertion may increase the level of heat stress.

To identify core industries, OSHA reviewed multiple sources. The Agency reviewed its OSHA Information System (OIS) database[8] to identify industries with fatal and non-fatal heat-related injuries and illnesses. In addition, OSHA identified occupations as being potentially high risk by analyzing (1) occupational information on outdoor work settings from the Occupational Information Network (O*NET) and (2) occupation-level data from the Occupational Requirements Survey (ORS) on exposure to radiant heat sources. Occupations flagged by those two data sources were then mapped to detailed 2017 North American Industry Classification System (NAICS*)* codes using the Occupational Employment and Wage Statistics (OEWS). This mapping identifies industries that are potentially high risk in terms of their share of workers in occupations that OSHA identified as potentially high risk. Finally, OSHA evaluated industries that were included in OSHA's National Emphasis Program for Outdoor and Indoor Heat-Related Hazards, ANPRM comments, and stakeholder comments. Table C-1 in Appendix C lists the NAICS codes for each of the core industries identified by OSHA.

As noted in Section II of this Background Document, OSHA is considering exempting from the scope of the rule certain operations already covered under 29 CFR 1910.156 or 29 CFR 1910.120. Although OSHA is not considering any industry-wide exemptions, it is considering several work-related exemptions that would likely make application of the standard infrequent in industries outside those identified here as core industries.

Agriculture, Forestry, and Fishing

Agricultural workers are seasonally exposed to hazardous heat where they are at risk of adverse heat-related health outcomes. Work duties often include laboring outside at a fast pace during hot days. Workers often have limited protection from solar radiation on sunny days and access to water can be

[8] OSHA requires employers to report all severe work-related injuries, defined as amputation, fatality, in-patient hospitalization, or loss of eye. Details from the investigations of incidents reported to the Agency are entered into OIS, including NAICS code, incident narrative, occupation, and nature of injury.

limited in some work environments.[9] Indoor agricultural work may occur in greenhouses where high temperatures, and potentially high humidity levels, are maintained in an enclosed space, which may contribute to occupational heat stress throughout the year. Both outdoor and indoor agricultural workers often spray chemicals, such as pesticides, that can be harmful to worker health. To avoid the harmful effects of such chemicals, workers must don highly insulative personal protective equipment (PPE), which can increase worker exposure to heat stress.[10]

Logging and forestry predominantly take place outdoors in forested areas. During warm months, climatic conditions may result in prolonged periods of exposure to high temperatures while workers perform physically intense manual labor,[11,12] increasing workers' risk of heat-related illnesses. PPE utilized by forestry workers, such as safety trousers, can be heavy and insulative, increasing workers' exertion levels and thermal discomfort.[13]

Fishery workers regularly perform physically demanding work outdoors.[14] Workers are likely to face seasonal exposure to high temperatures, high humidity, and elevated levels of direct solar radiation. Fishery workers often don PPE, such as overalls, to protect themselves from workplace hazards,[15] which can be highly insulative and increase the physical burden to workers involved in strenuous manual labor.

Building Material and Equipment Suppliers

Building material and equipment suppliers may work in outdoor settings, such as scrap yards where they are seasonally exposed to outdoor high temperatures and solar radiation, or in poorly ventilated indoor settings that can reach high temperatures, resulting in worker exposure to hazardous heat. Additionally, workers in this core industry may operate tools and machinery that generate heat, further exposing

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[9] Spector, J. T., Krenz, J., Rauser, E., & Bonauto, D. K. (2014a). Heat-related illness in Washington State Agriculture and Forestry Sectors. *American Journal of Industrial Medicine, 57*(8), 881–895. https://doi.org/10.1002/ajim.22357

[10] Fishel, F. (2022). Personal Protective Equipment for Handling Pesticides. *EDIS, 2022*(4). https://edis.ifas.ufl.edu/publication/PI061

[11] Wästerlund, D. S. (1998). A review of heat stress research with application to forestry. *Applied Ergonomics, 29*(3), 179–183. https://doi.org/10.1016/S0003-6870(97)00063-X

[12] Bureau of Labor Statistics, U.S. Department of Labor. (2022, September 8). *Occupational outlook handbook: Logging workers.* Retrieved May 31, 2023, from https://www.bls.gov/ooh/farming-fishing-and-forestry/logging-workers.htm

[13] Bauske, E., Hutcheson, W., & Orrellana, R. (2018, December 6). *Chainsaw safety: Always use your personal protective equipment (PPE)*. University of Georgia Extension, Circular 1148. Retrieved May 31, 2023 from https://extension.uga.edu/publications/detail.html?number=C1148&title=chainsaw-safety-always-use-your-personal-protective-equipment-ppe

[14] Parsons, L. A., Shindell, D., Tigchelaar, M., Zhang, Y., & Spector, J. T. (2021). Increased labor losses and decreased adaptation potential in a warmer world. *Nature Communications, 12*(1), 7286. https://doi.org/10.1038/s41467-021-27328-y

[15] The Fishing Daily. (2020, January 9) *What apparel and safety equipment does a deckhand need?* Retrieved May 24, 2023, from https://thefishingdaily.com/business-features/what-apparel-and-safety-equipment-does-a-deckhand-need

workers to heat hazards. A review of heat-related illnesses in OSHA's OIS database in the building material and equipment supply industries found incidents often occurred while employees were in outdoor work settings. For example, one worker experienced heat-related illness while in an auto parts yard, and another suffered heat exhaustion while working as a cashier in an outdoor garden center. In addition, a worker at a recyclable materials merchant wholesaler suffered heat exhaustion while operating a sweat furnace to dismantle scrap.[16,17]

Commercial Kitchens

Workplaces with commercial kitchens, such as restaurants and bakeries, have several sources of radiant heat, such as ovens, stovetops, and grills. These create potentially dangerous heat levels for their employees. Heat exposure occurs when oven doors are opened, which releases hot air to the surrounding area, or when working in front of an underfired char broiler (700°F) or the open flames of a grill.[18] These workplaces may also require employees to move quickly in kitchens and dining areas as well as lift heavy items, such as boxes,[19,20] creating additional metabolic heat. For commercial kitchens with inadequate ventilation systems, pre-existing heat from radiant heat exposure and physical activity can be amplified by high outdoor temperatures. While most work occurs indoors, work may also be performed in outdoor settings, such as food stands or outdoor catered events.[21]

Construction

Construction sites are often located outdoors with limited access to shade. Road work, for example, is typically performed in an open area with few trees or natural cover. Workers who perform tasks in direct sunlight, such as roofing, scaffolding construction, steel fixing, and concrete pouring, are very

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[16] United States Census Bureau. (n.d.). *North American Industry Classification System: 423930 Recyclable Material Merchant Wholesalers.* Retrieved May 31, 2023, from https://www.census.gov/naics/?input=423930&year=2022&details=423930

[17] Legal Information Institute. (n.d.*). Definition: Sweat furnace from 40 CFR § 63.1503*Retrieved May 31, 2023, from https://www.law.cornell.edu/definitions/index.php?width=840&height=800&iframe=true&def_id=efbe399deff45ff22f9b92475d9f7e22&term_occur=12&term_src=Title:40:Chapter:I:Subchapter:C:Part:63:Subpart:RRR:Subjgrp:211:63.1506

[18] Lowell, C. (2020, July 22). *How does radiant heat affect your chef's and kitchen staff comfort?* Kitchen Ventilation by Halton. Retrieved April 6, 2023, from https://kitchenventilation.com/2020/07/22/how-does-radiant-heat-affect-your-chefs/

[19] Malovany, D. (2021, December 14). *If you can't stand the heat, stay out of the kitchen.* Baking Business. Retrieved April 6, 2023, from https://www.bakingbusiness.com/articles/55308-if-you-cant-stand-the-heat-stay-out-of-the-kitchen

[20] Bureau of Labor Statistics, U.S. Department of Labor. *Occupational outlook handbook: Cooks*. Retrieved May 31, 2023, from https://www.bls.gov/ooh/food-preparation-and-serving/cooks.htm

[21] Ibid.

vulnerable to heat stress.[22] Many materials used in construction, such as asphalt and concrete, attract heat from the sun, thus increasing the surface temperature to levels above the ambient air temperature.[23] Construction workers may also be exposed to additional heat sources while performing tasks such as welding or operating a cutting torch.[24]

Construction work is physically demanding, and construction workers generate metabolic heat from heavy lifting and from performing other strenuous tasks. For safety reasons, construction workers may wear PPE, such as impermeable coveralls. Such PPE can trap heat and further raise their body temperature.[25]

Drycleaning and Commercial Laundries

Employees of laundromats and dry cleaners are exposed to potentially dangerous heat and humidity levels from radiant heat and steam emitted by washers, dryers, steamers, and irons. Steaming a garment, for example, releases excess steam into the surrounding work area. Commercial dryers heat up to 176°F and produce radiant heat in an enclosed indoor environment.[26]

Fire Protection

Firefighters are primarily exposed to heat from fires they are working to suppress. In residential fires, air temperatures can climb to almost 400°F, depending on the scale of the fire.[27] Firefighters' PPE, while necessary for protection, impedes the body's ability to cool down. Under heavy layers of PPE, heat is trapped, and sweat cannot evaporate.[28] This situation is exacerbated by the physically demanding and

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[22] Yi, W., & Chan, A. P. C. (2017). Effects of heat stress on construction labor productivity in Hong Kong: A case study of rebar workers. *International Journal of Environmental Research and Public Health*, *14*(9), 1055. https://doi.org/10.3390/ijerph14091055

[23] Aletba, S. R., Abdul Hassan, N., Putra Jaya, R., Aminudin, E., Mahmud, M. Z., Mohamed, A., & Hussein, A. A. (2021). Thermal performance of cooling strategies for asphalt pavement: A state-of-the-art review. *Journal of Traffic and Transportation Engineering (English Edition)*, *8*(3), 356–373. https://doi.org/10.1016/j.jtte.2021.02.001

[24] Centers for Disease Control and Prevention. (n.d.). *Heat stress in construction*. Retrieved April 11, 2023, from https://blogs.cdc.gov/niosh-science-blog/2020/05/21/heat-stress-construction

[25] Ibid.

[26] Page, D. (n.d.) *The Maximum Temperature for a Clothes Dryer.* Hunker. Retrieved May 24, 2023, from https://www.hunker.com/12003256/the-maximum-temperature-for-a-clothes-dryer

[27] Willi, J. M., Horn, G. P., & Madrzykowski, D. (2016). Characterizing a firefighter's immediate thermal environment in live-fire training scenarios. *Fire Technology*, *52*(6), 1667–1696. https://doi.org/10.1007/s10694-015-0555-1

[28] Annaheim, S., Saiani, F., Grütter, M., Fontana, P., Camenzind, M., & Rossi, R. (2015). Internal and external heat load with fire fighter protective clothing: Data from the lab and the field. *Extreme Physiology & Medicine*, *4*(S1). https://doi.org/10.1186/2046-7648-4-s1-a100

strenuous nature of the work.[29] Additionally, wildland firefighters perform high intensity tasks, such as hiking, fireline construction, and operating chainsaws, increasing the risk of heat-related illness.[30]

Landscaping and Facilities Support

Landscapers work outdoors maintaining gardens and lawns, trimming trees and hedges, seeding and sodding lawns, planting flowers or plants, and applying fertilizer, among other tasks. The work is often conducted in direct sunlight and involves heavy lifting and carrying, digging, and operating tools or equipment.[31,32] In addition to working in potentially hot outdoor temperatures, the physical demands of the work exacerbate the potential for heat-related illnesses. Landscapers also operate machinery that generates its own heat, such as lawnmowers, leaf blowers, and chainsaws. The radiant heat emitted by these machines can increase the heat burden experienced by workers. PPE worn by landscapers, such as long sleeve shirts, pants, hats, and gloves, can trap internal heat, making it even more difficult for landscapers to cool off.[33]

Facilities support workers provide operational services, such as janitorial, grounds maintenance, trash, pest control, and guard and security services.[34,35] Certain tasks, such as grounds maintenance, are performed outdoors, putting facilities workers at risk of heat-related illness. In cemeteries, grounds maintenance workers are exposed to heat while manually digging graves and maintaining headstones and green spaces. Pest control workers sometimes perform tasks in poorly ventilated buildings, increasing the risk of exposure to hazardous heat. These workers may also apply thermal treatments that generate radiant heat, exacerbating the situation.

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[29] Serban, A. (2019, October 19) *The impact of heat stress in firefighter fatalities*. Honeywell. Retrieved April 6, 2023, from https://sps.honeywell.com/us/en/support/blog/safety/the-impact-of-heat-stress-in-firefighter-fatalities

[30] West, M. R., Costello, S., Sol, J. A., & Domitrovich, J. W. (2020). Risk for heat-related illness among wildland firefighters: job tasks and core body temperature change. *Occupational and Environmental Medicine, 77*(7), 433–438. https://doi.org/10.1136/oemed-2019-106186

[31] Bureau of Labor Statistics, U.S. Department of Labor. *Occupational outlook handbook: Grounds Maintenance Workers.* Retrieved May 31, 2023, from https://www.bls.gov/ooh/building-and-grounds-cleaning/grounds-maintenance-workers.htm

[32] *Landscaper*. (n.d.) Careers in Construction. Retrieved April 6, 2023, from https://www.careersinconstruction.ca/en/career/landscaper

[33] *Personal Protective Equipment*. (n.d.). National Association of Landscape Professionals. Retrieved April 6, 2023, from https://www.landscapeprofessionals.org/LP/Safety/PPE.aspx

[34] United States Census Bureau. (n.d.). *North American Industry Classification System: 561210 Facilities Support Services.* Retrieved May 31, 2023, from https://www.census.gov/naics/?input=561210&year=2022&details=561210

[35] United States Census Bureau. (n.d.). *North American Industry Classification System: 561710 Exterminating and Pest Control Services*. Retrieved May 31, 2023, from https://www.census.gov/naics/?input=561210&year=2022&details=561710

Maintenance and Repair

Maintenance and Repair includes automobile repair and maintenance, commercial industrial machinery and repair, and personal household goods repair. Automobile repair and maintenance employees can experience high levels of heat stress because they are routinely engaged in manual labor and work in garages that may have insufficient ventilation. Workers in garages with minimal or no insulation may experience indoor ambient temperatures up to 20°F warmer than outside temperatures.[36] Other maintenance and repair employees could be subject to high temperatures when working outdoors or when working inside a residential or commercial building with insufficient ventilation, particularly if working in small areas, such as crawl spaces or attics.[37]

Manufacturing

Certain manufacturing processes, such as glass and brick manufacturing which involve ovens, generate extreme temperatures that can adversely impact worker health.[38] In addition, not only do workers operate heavy equipment and maintain high activity levels under hot conditions,[39] they may also be required to wear heavy and insulative PPE that can increase levels of heat stress.[40]

Food processing is a type of manufacturing that involves the preparation, transformation, and packaging of food products during which raw food may be cooked and altered to create a finished product.[41] Workers are exposed to radiant heat from stoves, ovens, steam, and cookers.[42] While equipment and machines used in production lines generate heat themselves, workers are also exposed to heat from

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[36] Smith, S. (2021, June 10). *Guest blog: How does heat stress impact auto technicians?* Vehicle Services Pros. Retrieved April 6, 2023, from https://www.vehicleservicepros.com/service-repair/the-garage/blogs/blog/21226301/guest-blog-how-does-heat-stress-impact-auto-technicians

[37] *The very real dangers of heat stroke.* (2020, July 13). U.S. Boiler Company. Retrieved June 1, 2023, from https://www.usboiler.net/the-very-real-dangers-of-heat-stroke.html

[38] Meegahapola, P. A., & Prabodanie, R. A. R. (2018). Impact of environmental conditions on workers' productivity and health. *International Journal of Workplace Health Management, 11*(2), 74–84. https://doi.org/10.1108/IJWHM-10-2017-0082

[39] Marsh, J. (2022, July 21). *Heat stress often overlooked in manufacturing and industrial environments.* Industrial Safety and Hygiene News. Retrieved May 31, 2023, from https://www.ishn.com/articles/113415-heat-stress-often-overlooked-in-manufacturing-and-industrial-environments

[40] *Protective gear and PPE for the manufacturing industry.* (2021, September 28). Retrieved May 31, 2023, from https://www.themanufacturer.com/articles/protective-gear-and-ppe-for-the-manufacturing-industry

[41] Britannica, T. Editors of Encyclopedia (2023, April 21). *food processing. Encyclopedia Britannica.* https://www.britannica.com/technology/food-processing

[42] Connor, G. (2019, September 29). *Heat risks in food plants: Illinois Workers Comp Lawyer*. Retrieved April 6, 2023, from https://geraldfconnorlaw.com/food-plants-heat-risks

frying, baking, boiling, and drying food.[43,44] Radiant heat from machinery may be compounded by seasonal heat, particularly where processing plants are poorly ventilated or are not air-conditioned.

Primary metal manufacturing creates metal products by smelting and/or refining metals.[45] Foundry workers cast metal objects by melting metal into a molten liquid state, pouring it into a mold, and letting it cool.[46] Molten metals are extremely hot, often upwards of 1500°F, and are significant contributors to radiant heat at foundries.[47] In addition to the heat generated by the molten metals, working at a foundry requires intense physical activity, which generates metabolic heat. Employees must pour metal, move and position castings, and stand for long periods of time.[48,49] A 2014 study conducted at a Texan aluminum smelting facility, that collected temperature measurements in multiple work areas within the facility, found that potrooms had the highest levels of radiant heat; all but one were at or above 96°F.[50] Of the sixty workers observed within the facility, more than half exhibited at least one symptom of heat strain.

Oil and Gas

Many oil and gas workers labor outside, exposed to seasonally high temperatures and direct solar radiation.[51] Additionally, workers often perform physically demanding labor, such as handling and maintaining heavy machinery and equipment, operating pump valves, and repairing oil-hauling vehicles in poorly ventilated areas, such as inside tanks and ditches.[52,53] Workers are often required to wear PPE,

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[43] *How to keep food and beverage workers safe in Hot Workspaces*. (n.d.). Aggreko. Retrieved April 6, 2023, from https://www.aggreko.com/en-us/news/2020/nam-articles/food-and-beverage/how-to-keep-food-and-beverage-workers-safe-in-hot-workspaces

[44] Jayas, D. (2016). *Reference Module in Food Science: Food Dehydration*. Elsevier.

[45] Bureau of Labor Statistics, U.S. Department of Labor. (n.d.) *Industries at a Glance: Primary Metal Manufacturing: NAICS 331*. Retrieved June 2, 2023, from https://www.bls.gov/iag/tgs/iag331.htm

[46] Arzt, K. (2022, March 28). *Foundries 101: What is a foundry? What Foundry Workers Do?* The Crucible. Retrieved April 6, 2023, from https://www.thecrucible.org/guides/metalworking/foundry

[47] *Understanding the Melting Points of Metal*. (n.d.). Retrieved April 6, 2023, from https://www.industrialmetalsupply.com/blog/understanding-the-melting-points-of-metal

[48] National Center for O*NET Development. (n.d.). *51-4071.00: Foundry Mold and Coremakers.* Retrieved June 1, 2023, from https://www.onetonline.org/link/summary/51-4071.00

[49] Bureau of Labor Statistics, U.S. Department of Labor. (2022). Occupational Requirements Survey Database. https://www.bls.gov/ors/data.htm. Accessed 1 June 2023.

[50] Dang, B. N., & Dowell, C. H. (2014). Factors associated with heat strain among workers at an aluminum smelter in Texas. *Journal of Occupational and Environmental Medicine, 56*(3), 313–318. https://doi.org/10.1097%2FJOM.0000000000000095

[51] RPS Solutions. (2020). *Heat stress prevention in the energy industry*. Retrieved June 2, 2023, from https://rpssolutions.net/heat-stress-prevention-in-the-energy-industry

[52] Indeed Editorial Team. (2022). *14 Different types of oil rig jobs (with benefits and tips).* Retrieved June 2, 2023, from https://www.indeed.com/career-advice/finding-a-job/different-types-of-oil-rig-jobs

[53] Portacool, LLC. (2023). *Common heat stress concerns at oil rigs.* Retrieved June 2, 2023, from https://portacool.com/common-heat-stress-concerns-at-oil-rigs

which can be highly insulative and heavy, increasing physical burdens to workers and their exposure to uncomfortable thermal conditions.[54]

Postal and Delivery Services

Postal and delivery workers spend time outdoors or inside vehicles, often carrying heavy loads that increase levels of heat stress. They work outdoors in all-weather conditions, some working on foot, and some driving delivery vehicles without air-conditioning, where interior temperatures can be at least 10°F warmer than outside temperatures.[55,56] Delivery workers might be susceptible to heat stress in cases where they are unable to reschedule or alter delivery routes or vary the pace of their work even if they are experiencing heat-related symptoms.[57] Additionally, delivery truck cargo areas, where workers organize and load packages, can reach over 140°F on a hot day.[58]

Recreation and Amusement

Several jobs within the amusement and recreation industries take place outdoors and put employees at risk of heat-related illnesses. Examples include spectator sporting event jobs, amusement park jobs, lifeguards, beach and pool attendants, and recreational vehicle (RV) site jobs. These jobs are performed outdoors, and many are seasonal jobs in the summer months when temperatures are higher. Some jobs within these sectors are at an even higher risk of heat exposure. For example, amusement park employees that wear character costumes during outdoor performances are at high risk of heat-related illness, which is exacerbated by heat-trapping costumes as well as physical exertion.[59,60]

Sanitation and Waste Removal

Sanitation and waste removal services include waste collection services, landfill operations, recycling and trash sorting, cleanup of contaminated sites, septic pumping, and other waste management. Many of these jobs are performed primarily outdoors and are physically demanding. The physical labor of

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[54] Ibid.
[55] Owens, R. (2017, July 2). *Video: It's Hot Outside – Even Hotter in A Mail Truck*. Postal Employee Network. Retrieved April 6, 2023, from https://postalemployeenetwork.com/news/2017/07/02/video-its-hot-outside-even-hotter-in-a-mail-truck/#:~:text=Duran%20allowed%20CBS%20to%20take,all%20metal%20inside%20and%20out
[56] Carino, M. M. (2022, August 16). *Heat waves perilous for delivery truck drivers*. Marketplace. Retrieved April 11, 2023, from https://www.marketplace.org/2022/08/16/heat-waves-perilous-for-delivery-truck-drivers
[57] Seville, L.R. (July 18, 2019). *In the Hot Seat: UPS Delivery Drivers at Risk of Heat-Related Illnesses*. NBCNews.com. Retrieved April 6, 2023, from https://www.nbcnews.com/business/economy/hot-seat-ups-delivery-drivers-are-risk-heat-stroke-kidney-n1031321
[58] Ibid.
[59] Hosier, F. (2016). *Costumed amusement park employees suffer heat-related illness: OSHA fine.* Retrieved June 1, 2023, from https://www.safetynewsalert.com/costumed-amusement-park-employees-suffer-heat-related-illness-osha-fine
[60] Galfand Berger, LLP. (2020, July 17). *What are the hazards of working in an amusement park?* Retrieved May 24, 2023, from https://www.galfandberger.com/2020/07/17/amusement-park

lifting, pulling, and carrying garbage and recycling cans can increase body temperature, exacerbating the potential for heat-related illness or injury.[61] Workers in indoor environments, such as recycling sorters in materials recovery facilities, also report working in hot temperatures[62,63] and completing physical tasks while wearing PPE, such as gloves, coveralls, and masks.[64]

Telecommunications

Employees in the telecommunications industry, particularly line workers, may experience high levels of heat stress because they work outdoors in all-weather conditions, including direct sunlight, and typically perform physically demanding tasks.[65] These workers install and repair telecommunications equipment, dig trenches, lay underground cable, and operate power equipment. Telecommunications technicians perform installation and repair services in residential and commercial customers' property, that may have insufficient ventilation.[66]

Temporary Help Services

Temporary workers are hired through staffing agencies to work for host employers.[67] Temporary workers are found across all industries, including those that OSHA identified as the core industries at elevated risk of exposure to heat stress, such as manufacturing, transportation, and warehousing.[68] Temporary workers may face increased risk of heat illness due to lack of work-site specific safety

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[61] *Personal protective equipment for waste handlers and incinerator ... - path*. (n.d.). Retrieved April 6, 2023, from https://media.path.org/documents/TS_ppe_handouts.pdf

[62] State of Oregon. (n.d.) *Modernizing Oregon's Recycling System with Support from Oregon Consensus: Study of Material Recovery Facility Workers.* Retrieved May 24, 2023, from https://www.oregon.gov/deq/recycling/Documents/rscMRFWorkerSumD.pdf

[63] Occupational Safety and Health Administration: Region 2. (2014, January 30). *Brooklyn, NY, recycler cited by US Labor Department's OSHA for heat-related death* [Press Release]. https://www.osha.gov/news/newsreleases/region2/01302014-0

[64] Labor Occupational Health Program. (n.d.) *Worker Safety in Recycling Facilities*. Retrieved June 2, 2023, from https://lohp.berkeley.edu/wp-content/uploads/2013/12/english_recycling.pdf

[65] Bureau of Labor Statistics, U.S. Department of Labor. (2022, October 4*). Occupational outlook handbook: Line installers and repairers.* Retrieved May 31, 2023, from https://www.bls.gov/ooh/installation-maintenance-and-repair/telecommunications-equipment-installers-and-repairers-except-line-installers.htm#tab-3

[66] Bureau of Labor Statistics, U.S. Department of Labor. (2022, October 4). *Occupational outlook handbook: Line installers and repairers.* Retrieved June 2, 2023, from https://www.bls.gov/ooh/installation-maintenance-and-repair/line-installers-and-repairers.htm#tab-2

[67]Occupational Safety and Health Administration. (n.d.). *Protecting Temporary Workers*. Retrieved May 23, 2023, from https://www.osha.gov/temporaryworkers

[68] Forst, L., Chaudhry, A., Lopez, A., McCarthy, M., & Hebert-Beirne, J. (2023). Protecting workers in the temporary staffing industry. *Occupational Medicine (Oxford, England), 73*(4), 193–198. https://doi.org/10.1093/occmed/kqad045

training and experience.[69,70] Furthermore, temporary workers may not know how to report occupational hazards, including heat stress.[71,72]

Transportation

Employees in the transportation industry, such as truck drivers, airline ground workers, maritime jobs, and railyard workers, are at risk of heat-related illness from exposure to high outdoor temperatures.

Truck drivers face risks similar to those discussed for delivery workers while preparing loads for delivery and unloading.

In the air transportation industry, airline ground workers are responsible for inspecting tarmacs, loading, and unloading baggage, and ensuring that aircraft are ready for takeoff and landing.[73] These workers, therefore, spend most of the day outdoors regardless of the weather. Airline ground workers often perform physically demanding labor (e.g., baggage handling) in direct sunlight and on hot pavement. They typically have little access to shade on tarmacs, where concrete or asphalt can reach temperatures up to 150°F in the sun.[74] Furthermore, airline ground workers wear PPE, such as earmuffs, gloves, and vests, that can trap internal heat and further raise workers' body temperature.

Water transportation workers include sailors or deckhands, ship engineers, marine oilers, shipbuilders, port operators, and ship loaders, among others.[75] These jobs may require outdoor work or work in small

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[69] Virtanen, M., Kivimäki, M., Joensuu, M., Virtanen, P., Elovainio, M., & Vahtera, J. (2005). Temporary Employment and Health: A Review. *International Journal of Epidemiology*, *34*(3), 610–622. https://doi.org/10.1093/ije/dyi024

[70] Al-Tarawneh, I. S., Wurzelbacher, S. J., & Bertke, S. J. (2020). Comparative analyses of workers' compensation claims of injury among temporary and permanent employed workers in Ohio. *American Journal of Industrial Medicine, 63*(1), 3–22. https://doi.org/10.1002/ajim.23049

[71] Caban-Martinez, A. J., Santiago, K. M., Stillman, J., Moore, K. J., Sierra, D. A., Chalmers, J., Baniak, M., & Jordan, M. M. (2018). Physical exposures, work tasks, and OSHA-10 training among temporary and payroll construction workers. *Journal of Occupational & Environmental Medicine*, *60*(4). https://doi.org/10.1097/jom.0000000000001267

[72] *From the Fields to the Factories: Preventing Workplace Injury and Death from Excessive Heat: Hearing before the Subcommittee on Workforce Protections Committee on Education and Labor,* U.S. House of Representatives, 116th Cong. 12 (2019) (testimony of Javier Rodriguez). Retrieved June 2, 2023, from https://www.congress.gov/116/meeting/house/109767/witnesses/HHRG-116-ED10-Wstate-RodriguezJ-20190711.pdf

[73] *Ground Services Workers*. (n.d.). Firsthand. Retrieved May 23, 2023, from https://firsthand.co/professions/ground-services-workers

[74] Brotak, E. (2018, September 12). *Get a handle on the heat*. Aviation Pros. Retrieved May 23, 2023, from https://www.aviationpros.com/ground-handling/ground-handlers-service-providers/article/12422966/get-a-handle-on-the-heat

[75] Sawyer, R. (n.d.). *THE CASEWORKER'S GUIDE TO THE MARITIME INDUSTRY*. Retrieved April 6, 2023, from https://cool.osd.mil/usn/pubs/MaritimeCareersResourceGuide.pdf

spaces, such as engine rooms, which increases employees' heat stress.[76] Temperatures may be excessive in rooms with heat-producing machinery and in rooms with no ventilation. Sailors[77] who live and work on ships for months at a time may experience regular exposure to environmental heat. Land-based workers are involved in ship building and repair, loading and unloading cargo or passengers, and other tasks related to the maintenance and coordination of ships.[78] Many jobs in the maritime industry require physical labor while wearing PPE, such as coveralls and hard hats, which can increase body temperature.[79]

Covered railroad employees may include some conductors and train attendants who work inside trains, as well as rail maintenance workers, rail car repairers, and railroad brake, signal, and switch operators who primarily work outside in rail yards and along rail lines.[80,81] Rail maintenance workers are responsible for laying track, performing track repairs, and maintaining railroad equipment.[82] Rail car repairers perform diagnostic mechanical tests, repair, and maintenance on rail cars. Brake operators connect and disconnect trains, switch operators monitor switches and other locomotive instruments, and signal operators install and maintain signals in the rail yard. These jobs may be physically demanding. For example, rail maintenance workers performing maintenance on rail tracks engage in

[76] Palella, B. I., Quaranta, F., & Riccio, G. (2016). On the management and prevention of heat stress for crews onboard ships. *Ocean Engineering, 112,* 277–286. https://doi.org/10.1016/j.oceaneng.2015.12.030

[77] With limited exceptions, the United States Coast Guard (U.S.C.G.), rather than OSHA, promulgates and enforces regulations affecting the working conditions of seamen aboard vessels inspected and certified by the U.S.C.G. OSHA's health and safety standards generally apply to the working conditions of employees other than seamen on inspected vessels and to working conditions on uninspected vessels for which no specific U.S.C.G. regulation applies. For detailed discussion of OSHA enforcement in this area, see OSHA Authority Over Vessels and Facilities on or Adjacent to U.S. Navigable Waters and the Outer Continental Shelf (OCS). CPL 02-01-047, (February 22, 2010).

[78] Sawyer, R. (n.d.). *THE CASEWORKER'S GUIDE TO THE MARITIME INDUSTRY*.

[79] Kaushik, M. (2019, January 26). *10 Main Personal Protective Equipment (PPE) Used Onboard Ship*. Marine Insight. Retrieved June 1, 2023, from https://www.marineinsight.com/marine-safety/10-main-personal-protective-equipment-ppe-used-onboard-ship

[80] The Federal Railroad Administration (FRA) has promulgated regulations requiring the use of environmental controls to address heat hazards in three specific, limited contexts: non-steam-powered locomotives purchased or remanufactured after June 8, 2012 (49 CFR 229.119(g)), camp cars (49 CFR 228.313(c)), and certain on-track roadway maintenance machines (49 CFR 214.505(a)). OSHA's standard would apply to the working conditions of railroad employees in all other contexts, including within trains and machinery not covered by these regulations and during all outdoor work.

[81] Bureau of Labor Statistics, U.S. Department of Labor. (2022, October 4). Occupational outlook handbook: Railroad Workers. Retrieved June 2, 2023, from https://www.bls.gov/ooh/transportation-and-material-moving/railroad-occupations.htm

[82] National Center for O*NET Development. (n.d.). *47-4061.00: Rail-Track Laying and Maintenance Equipment Operators*. Retrieved June 21, 2023, from https://www.onetonline.org/link/summary/47-4061.00

heavy lifting, pulling, and operating heavy equipment.[83,84] Employees working in rail yards also wear PPE, which traps heat and can further raise their body temperature.[85,86]

Utilities

Utility workers provide services such as electric power, water supply, and sewage removal.[87] Work settings vary among utility workers. Some are involved in the maintenance and construction of outdoor infrastructure, where they are exposed to seasonally high temperatures and direct solar radiation. Electric power distributors control the flow of electricity, repair power lines and respond to emergencies as necessary.[88] Sewage and water plant workers spend time both indoors and outdoors testing water, repairing machinery, and recording meter readings.[89] Utility workers also perform tasks that are physically demanding, such as operating heavy machinery, lifting heavy objects, or climbing.[90] Some workers are primarily in indoor settings, such as nuclear power plant operators, and operate power-generating equipment that may generate heat, while wearing PPE to reduce exposure to hazardous materials.[91,92]

Warehousing

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[83] Ibid.

[84] Trac-Work, Inc. (n.d.). *TRACK LABORER – JOB DESCRIPTION*. Retrieved June 2, 2023, from http://www.trac-work.com/track-laborer/

[85] Charles Goetsch Law Offices, LLC. (2022, July 27). *Railroad workers are at high risk for heat-related illnesses*. Retrieved May 24, 2023, from https://www.gowhistleblower.com/blog/2022/07/railroad-workers-are-at-high-risk-for-heat-related-illnesses

[86] Union Pacific Railroad. (n.d.). *Safety Rules*. Retrieved June 2, 2023, from https://www.up.com/ert/safety.pdf

[87] Bureau of Labor Statistics, U.S. Department of Labor. (n.d.). *Industries at a glance: Utilities: NAICS 22*. Retrieved May 24, 2023, from https://www.bls.gov/iag/tgs/iag22.htm

[88] Bureau of Labor Statistics, U.S. Department of Labor. (2022, October 4). *Occupational outlook handbook: Power Plant Operators, distributors, and dispatchers.* Retrieved May 24, 2023, from https://www.bls.gov/ooh/production/power-plant-operators-distributors-and-dispatchers.htm#tab-2

[89] Bureau of Labor Statistics, U.S. Department of Labor. (2022, October 4). *Occupational outlook handbook: Water and wastewater treatment plant and system operators*. Retrieved May 24, 2023, from https://www.bls.gov/ooh/production/water-and-wastewater-treatment-plant-and-system-operators.htm#tab-2

[90] Bureau of Labor Statistics, U.S. Department of Labor. (2022, October 4). *Occupational outlook handbook: Line installers and repairers*. Retrieved June 2, 2023, from https://www.bls.gov/ooh/installation-maintenance-and-repair/line-installers-and-repairers.htm#tab-2

[91] Bureau of Labor Statistics, U.S. Department of Labor. (2022, October 4). *Occupational outlook handbook: Power Plant Operators, distributors, and dispatchers.* Retrieved May 24, 2023, from https://www.bls.gov/ooh/production/power-plant-operators-distributors-and-dispatchers.htm#tab-2

[92] Renaud, P. (2021, April 16). *Which PPE for working in nuclear power plants?* Retrieved June 2, 2023, from https://ouvry.com/en/which-ppe-for-working-in-nuclear-power-plants

Warehouses are typically large with uneven access to adequate air-conditioning depending on the work area within the facility.[93] When the sun shines directly on the roof of a warehouse, the indoor temperature rises dramatically, and hot air may be unable to escape. Due to poor ventilation, indoor temperatures may exceed outdoor temperatures.[94] Machinery may be running all the time, and there is constant worker activity. All of this increases the indoor temperature.[95] Production quotas that have to be met by performing strenuous labor at a fast pace can further increase warehousing workers' levels of heat stress.[96]

[93] Phillips, A. M. (2021, Oct 12). More warehouse workers toiling in extreme heat; Temperatures at facilities can hover above 90 degrees for hours; state officials have not yet finalized regulations. *Los Angeles Times* https://www.proquest.com/newspapers/more-warehouse-workers-toiling-extreme-heat/docview/2580845560/se-2

[94] Hecht Group. (n.d.). *Why warehouses are hotter than the outside temperature* Retrieved May 24, 2023, from https://www.hechtgroup.com/why-warehouses-are-hotter-than-the-outside-temperature

[95] Ibid.

[96] *From the Fields to the Factories: Preventing Workplace Injury and Death from Excessive Heat: Hearing before the Subcommittee on Workforce Protections Committee on Education and Labor,* U.S. House of Representatives, 116th Cong. 12 (2019) (testimony of Javier Rodriguez). Retrieved June 2, 2023, from https://www.congress.gov/116/meeting/house/109767/witnesses/HHRG-116-ED10-Wstate-RodriguezJ-20190711.pdf

Appendix C: Core Industry NAICS

Table C-1 lists the core industries and their associated detailed 2017 North American Industry Classification System (NAICS) codes.

Table C-1: Core Industries by NAICS Code

Core Industry	NAICS	NAICS Title
Agriculture, Fishing, and Forestry	**1111**	Oilseed and Grain Farming
	1112	Vegetable and Melon Farming
	1113	Fruit and Tree Nut Farming
	1114	Greenhouse, Nursery, and Floriculture Production
	1119	Other Crop Farming
	1121	Cattle Ranching and Farming
	1122	Hog and Pig Farming
	1123	Poultry and Egg Production
	1124	Sheep and Goat Farming
	1125	Aquaculture
	1129	Other Animal Production
	1131	Timber Tract Operations
	1132	Forest Nurseries and Gathering of Forest Products
	1133	Logging
	1141	Fishing
	1142	Hunting and Trapping
	1151	Support Activities for Crop Production
	1152	Support Activities for Animal Production
	1153	Support Activities for Forestry
Building Materials and Equipment Suppliers	**4233**	Lumber and Other Construction Materials Merchant Wholesalers
	4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers
	4239	Miscellaneous Durable Goods Merchant Wholesalers
	4441	Building Material and Supplies Dealers
	5324	Commercial and Industrial Machinery and Equipment Rental and Leasing

Core Industry	NAICS	NAICS Title
Commercial Kitchens	**3118**	Bakeries and Tortilla Manufacturing
	7223	Special Food Services
	7224	Drinking Places (Alcoholic Beverages)
	7225	Restaurants and Other Eating Places
Construction	**2361**	Residential Building Construction
	2362	Nonresidential Building Construction
	2371	Utility System Construction
	2372	Land Subdivision
	2373	Highway, Street, and Bridge Construction
	2379	Other Heavy and Civil Engineering Construction
	2381	Foundation, Structure, and Building Exterior Contractors
	2382	Building Equipment Contractors
	2383	Building Finishing Contractors
	2389	Other Specialty Trade Contractors
	5413	Architectural, Engineering, and Related Services
Drycleaning and Commercial Laundry	**8123**	Drycleaning and Laundry Services
Fire Protection	**92216**	Fire Protection
Landscaping and Facilities Support	**5612**	Facilities Support Services
	5617	Services to Buildings and Dwellings
	5619	Other Support Services
	8122	Death Care Services
	81293	Parking Lots and Garages
Maintenance and Repair	**8111**	Automotive Repair and Maintenance
	8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance
	8114	Personal and Household Goods Repair and Maintenance
Manufacturing	**3111**	Animal Food Manufacturing
	3112	Grain and Oilseed Milling
	3113	Sugar and Confectionery Product Manufacturing
	3114	Fruit and Vegetable Preserving and Specialty Food Manufacturing
	3115	Dairy Product Manufacturing
	3116	Animal Slaughtering and Processing

Core Industry	NAICS	NAICS Title
Manufacturing (continued)	**3117**	Seafood Product Preparation and Packaging
	3119	Other Food Manufacturing
	3121	Beverage Manufacturing
	3122	Tobacco Manufacturing
	3131	Fiber, Yarn, and Thread Mills
	3132	Fabric Mills
	3133	Textile and Fabric Finishing and Fabric Coating Mills
	3141	Textile Furnishings Mills
	3149	Other Textile Product Mills
	3151	Apparel Knitting Mills
	3152	Cut and Sew Apparel Manufacturing
	3159	Apparel Accessories and Other Apparel Manufacturing
	3161	Leather and Hide Tanning and Finishing
	3162	Footwear Manufacturing
	3169	Other Leather and Allied Product Manufacturing
	3211	Sawmills and Wood Preservation
	3212	Veneer, Plywood, and Engineered Wood Product Manufacturing
	3219	Other Wood Product Manufacturing
	3221	Pulp, Paper, and Paperboard Mills
	3222	Converted Paper Product Manufacturing
	3231	Printing and Related Support Activities
	3241	Petroleum and Coal Products Manufacturing
	3251	Basic Chemical Manufacturing
	3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing
	3253	Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing
	3254	Pharmaceutical and Medicine Manufacturing
	3255	Paint, Coating, and Adhesive Manufacturing
	3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing
	3259	Other Chemical Product and Preparation Manufacturing
	3261	Plastics Product Manufacturing
	3262	Rubber Product Manufacturing

Core Industry	NAICS	NAICS Title
Manufacturing (continued)	**3271**	Clay Product and Refractory Manufacturing
	3272	Glass and Glass Product Manufacturing
	3273	Cement and Concrete Product Manufacturing
	3274	Lime and Gypsum Product Manufacturing
	3279	Other Nonmetallic Mineral Product Manufacturing
	3311	Iron and Steel Mills and Ferroalloy Manufacturing
	3312	Steel Product Manufacturing from Purchased Steel
	3313	Alumina and Aluminum Production and Processing
	3314	Nonferrous Metal (except Aluminum) Production and Processing
	3315	Foundries
	3321	Forging and Stamping
	3322	Cutlery and Handtool Manufacturing
	3323	Architectural and Structural Metals Manufacturing
	3324	Boiler, Tank, and Shipping Container Manufacturing
	3325	Hardware Manufacturing
	3326	Spring and Wire Product Manufacturing
	3327	Machine Shops Turned Product and Screw, Nut, and Bolt Manufacturing
	3328	Coating, Engraving, Heat Treating, and Allied Activities
	3329	Other Fabricated Metal Product Manufacturing
	3331	Agriculture, Construction, and Mining Machinery Manufacturing
	3332	Industrial Machinery Manufacturing
	3333	Commercial and Service Industry Machinery Manufacturing
	3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing
	3335	Metalworking Machinery Manufacturing
	3336	Engine, Turbine, and Power Transmission Equipment Manufacturing
	3339	Other General Purpose Machinery Manufacturing
	3351	Electric Lighting Equipment Manufacturing
	3352	Household Appliance Manufacturing
	3353	Electrical Equipment Manufacturing

Core Industry	NAICS	NAICS Title
Manufacturing (continued)	**3359**	Other Electrical Equipment and Component Manufacturing
	3361	Motor Vehicle Manufacturing
	3362	Motor Vehicle Body and Trailer Manufacturing
	3363	Motor Vehicle Parts Manufacturing
	3364	Aerospace Product and Parts Manufacturing
	3365	Railroad Rolling Stock Manufacturing
	3366	Ship and Boat Building
	3369	Other Transportation Equipment Manufacturing
	3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing
	3372	Office Furniture (including Fixtures) Manufacturing
	3379	Other Furniture Related Product Manufacturing
	3391	Medical Equipment and Supplies Manufacturing
	3399	Other Miscellaneous Manufacturing
Oil and Gas	**2111**	Oil and Gas Extraction
	2131	Support Activities for Mining
	4861	Pipeline Transportation of Crude Oil
	4862	Pipeline Transportation of Natural Gas
	4869	Other Pipeline Transportation
Postal and Delivery Services	**4911**	Postal Services
	4921	Couriers and Express Delivery Services
	4922	Local Messengers and Local Delivery
Recreation and Amusement	**7112**	Spectator Sports
	7131	Amusement Parks and Arcades
	7139	Other Amusement and Recreation Industries
	7212	RV (Recreational Vehicle) Parks and Recreational Camps
Sanitation and Waste Removal	**5621**	Waste Collection
	5622	Waste Treatment and Disposal
	5629	Remediation and Other Waste Management Services
Telecommunications	**5173**	Wired and Wireless Telecommunications Carriers
	5174	Satellite Telecommunications
	5179	Other Telecommunications
Temporary Help Services	**5613**	Temporary Help Services

Core Industry	NAICS	NAICS Title
Transportation	**4811**	Scheduled Air Transportation
	4812	Nonscheduled Air Transportation
	4821	Rail Transportation
	4831	Deep Sea, Coastal, and Great Lakes Water Transportation
	4832	Inland Water Transportation
	4841	General Freight Trucking
	4842	Specialized Freight Trucking
	4851	Urban Transit Systems
	4859	Other Transit and Ground Passenger Transportation
	4881	Support Activities for Air Transportation
	4882	Support Activities for Rail Transportation
	4883	Support Activities for Water Transportation
	4884	Support Activities for Road Transportation
	4889	Other Support Activities for Transportation
Utilities	**2211**	Electric Power Generation, Transmission and Distribution
	2212	Natural Gas Distribution
	2213	Water, Sewage and Other Systems
Warehousing	**4931**	Warehousing and Storage

Heat Injury & Illness Prevention in Outdoor and Indoor Work Settings

Small Business Advocacy Review (SBAR) Questions

OSHA is considering promulgating a new standard to protect indoor and outdoor workers from hazardous heat. OSHA has convened a Small Business Advocacy Review (SBAR) Panel under the Small Business Regulatory Enforcement Fairness Act. The SBAR Panel has several purposes. The Panel provides an opportunity for affected small employers to provide comments in advance of a formal rulemaking process. After reviewing OSHA's potential options for the various elements of a proposed heat standard and estimates of the potential impacts of those options, Small Entity Representatives (SERs) can offer recommendations to the Panel on ways to tailor the standard to make it more cost-effective and less burdensome for affected small entities while still ensuring workers are adequately protected. Early comments permit identification of additional options or alternatives to the regulatory framework for the Panel to consider. Additionally, SERs can provide specific recommendations for the Panel to consider on issues such as reporting requirements, timetables of compliance, and whether some groups or industries should be exempt from all or part of the standard. A final report containing the findings, advice, and recommendations of the Panel will be submitted to the Assistant Secretary of Labor for Occupational Safety and Health to help inform the agency's decision making with respect to this possible rulemaking.

In this document, the SBAR Panel presents a list of questions organized by areas of particular interest to the agency. The Panel is seeking SER input on each of these topics. SERs may choose to answer any or all questions and should feel free to bring up any additional issues that they would like the Panel to consider.

General Topics:

1. What types of occupations at your workplace do you consider outdoor occupations, and what percentage of your workforce falls into that category? What types of occupations at your workplace do you consider indoor occupations and what percentage of your workforce falls into that category?

2. Consider employees at your workplace who work both indoors and outdoors; on average, how much time do they spend outdoors? How much time indoors? How much time indoors is next to process heat or heat-generating equipment?

3. Are there certain work settings in which you are unsure if they would be considered outdoor work settings or indoor work settings? If so, what are they? What characteristics of that work setting make it hard to classify as solely indoor or outdoor?

4. What geographic regional differences should be considered or accounted for when determining the appropriate interventions and practices to prevent heat-related injuries and illnesses among workers?

5. Does your workplace currently implement any of the measures considered in the regulatory framework to prevent or mitigate heat-related injuries and illnesses among workers? If so, which measures have been the most effective?

6. If you have mobile work sites, what difficulties do you encounter when trying to protect workers from hazardous heat? How do you deal with these challenges? OSHA is particularly interested in challenges that may be different than those faced in fixed work sites.

7. In Section III of the SER Background Document, OSHA has provided time and equipment estimates for different options that OSHA is considering for a potential heat standard. Are these estimates consistent with your experience?

8. If you were structuring a Heat Injury and Illness Prevention standard, what provisions do you believe are necessary? What provisions, if any, do you believe could be relaxed for certain groups, types, or sizes of entities?

9. Do you have any concerns about the feasibility of complying with any elements of the regulatory framework?

10. OSHA recognizes that there may be some language in the regulatory framework that may not be directly applicable to the operations of some industries within the contemplated scope. OSHA seeks input from SERs in helping identify such language.

11. How, and to what extent, would small entities in your industry be affected by a potential OSHA standard to protect workers from hazardous heat? Do special circumstances exist that make preventing heat-related injuries and illnesses in outdoor and indoor work settings more difficult or more costly for small entities than for large entities? Please describe these circumstances.

Scope:

12. OSHA has identified core industries as those that are likely to have an elevated risk of exposure to heat stress. Has OSHA overlooked any industries that should be included in the list of core industries? Are there industries that should be excluded from the list of core industries because they do not have an elevated risk? If so, please identify them and provide an explanation for inclusion/exclusion.

13. Should any types of employers or work settings or activities that are currently included in the contemplated scope of a heat standard be excluded? If so, please identify them and provide an explanation for why they should be excluded.

14. OSHA is considering the following exemptions to the scope of a heat standard:
    - Short duration exposures (e.g., 15 minutes of work in hazardous heat conditions every 60 minutes)
    - Emergency operations, such as those already covered under 29 CFR 1910.156 or 29 CFR 1910.120
    - Work in spaces where mechanical ventilation keeps work areas below certain conditions (e.g., the ambient temperature of 80°F)
    - Work done from home (e.g., telework, remote, and hybrid employees)
    - Sedentary or light activities performed indoors, if these are the only activities performed during the work shift

    OSHA is interested in receiving feedback from SERs on whether these settings should be in the scope of a potential standard.

Heat Injury and Illness Prevention Program:

15. If your workplace does not have an existing Heat Injury and Illness Prevention Program (HIIPP), how would you develop a HIIPP at your workplace? What steps would you take to develop the HIIPP? How long do you estimate that it would take to develop the HIIPP?

16. If your workplace has an existing HIIPP, what steps did you take to develop the HIIPP? Does your HIIPP include any of the elements discussed in Section II of the SER Background Document (page 10)? What steps would you have to take to update the HIIPP if OSHA adopted a heat standard? How long do you estimate that it would take to update the HIIPP?

17. The standard could require that employers involve employees in the development of the HIIPP. Have you ever involved employees in the development of any injury and illness programs/plans? If so, please describe the level of employee involvement and how it may have impacted the resulting program or plan.

18. If you have implemented a HIIPP, in your experience, what elements of your company's HIIPP have been most effective in reducing heat-related injuries and illnesses at your workplace?

19. What metrics do you utilize to determine effectiveness of the HIIPP? Have you seen a reduction in the number or severity of heat-related injuries and illnesses? Which elements did not seem effective?

20. Has your HIIPP reduced direct costs for your worksite (e.g., workers' compensation costs, fewer lost workdays) and indirect costs for your worksite (e.g., reductions in absenteeism and worker turnover; increases in reported productivity, satisfaction, and level of safety in the workplace)? Please quantify these reductions, if applicable.

Hazard Identification and Assessment:

21. If you conduct heat hazard identification and assessment at your workplace, how often is this conducted and how long does it take? What factors do you evaluate during the heat hazard identification and assessment?

22. If you are currently monitoring heat conditions at your worksite(s), what kind of monitoring equipment do you use? How many units of equipment are used? How much does it cost to purchase the equipment? How much time does it take for each measurement? How often are heat conditions monitored at your worksite(s)?

23. Are there other factors that you consider for hazard identification and assessment, either for fixed or mobile work sites, that are not included in the regulatory framework? If so, what are they and why do you think they are important?

24. OSHA is considering permitting an employer to forgo tracking forecasts or taking measurements if the employer assumes that a work area meets or exceeds both heat triggers. Employers that elect to do this would not incur monitoring costs. These employers would still be required to comply with relevant control measures as though they took a measurement that meets or exceeds the heat triggers. Do you think you would be likely to elect this exception? Why or why not?

Engineering Controls:

25. What engineering controls are in place at your workplace to mitigate the impact of process heat or heat generated by equipment on worker exposure to heat?

26. If your company provides company-provided vehicles to any workers, what types of controls to mitigate heat exposure are available to workers while using the vehicles?

27. OSHA discusses potential options for engineering controls in Section II of the SER Background Document (pages 16-17). Do you currently utilize any of these controls at your workplace? Which of these controls do you find to be the most effective? How does the type of work site (indoor, outdoor, vehicles) impact the effectiveness of these controls?

Water:

28. If you provide water coolers (with spigots) at outdoor worksites, how many coolers do you currently have and in what size? How many employees do these coolers accommodate?

29. In your workplace, how are you currently providing water to employees? What factors do you consider when determining the best method to provide suitably cool water that is easily accessible to employees? Does this differ for outdoor and indoor work settings?

Protections for Unacclimatized Workers:

30. Are there different challenges and best practices for acclimatization in indoor work settings versus outdoor work settings? Are there unique concerns or approaches for implementing acclimatization for a small versus large business?

31. What are the benefits and costs associated with acclimatization? Are there any challenges or barriers to providing workers with acclimatization?

32. OSHA estimates that employers would assign workers to alternative tasks during some or all of the acclimatization process, which would temper the amount of lost work time. Would this be possible at your company? Why or why not?

33. If you implement acclimatization at your workplace, what process do you currently utilize? Do you provide heat acclimatization for new and returning workers? (Returning workers may be those returning from leave, an extended vacation, or a position where they were not exposed to heat.) How often and for how long are acclimatization protections implemented? What factors do you consider when determining the best method to provide acclimatization for your employees?

Rest/Work-Rest:

34. Do you provide “meal breaks” to all employees? If so, how long are these breaks typically and are these “meal breaks” paid?

35. Do you allow employees to take breaks other than a “meal break”? If so, how often and how long do employees take these breaks? Are these breaks (that are not a “meal break”) considered paid or unpaid time? Do you (the employer) decide how long/often the breaks can

be, or can employees take breaks when they need to? Is there a total cap (or maximum) on the amount of time for these breaks (e.g., total amount of break time allowed per day)?

36. Do you modify your policy on breaks when it is a particularly hot day? If so, how do you define a "hot day"? When an employee takes a break, what strategies can/do they use to cool down on hot days?

37. Would it be feasible for you to allow employees to take breaks when they need to on hot days above a certain temperature? Why or why not? How about allowing employees to take 10-minute or 15-minute breaks at regular intervals, such as after every 2 hours of work, on hot days above a certain temperature? Why or why not?

Supervision/Observation:

38. How are employees supervised/observed when they are exposed to heat? Is there a specific trigger that is used to determine when supervision/observation is necessary?

39. What are the best practices for supervising/observing employees for signs of heat-related injury and illness at your worksite(s)? How effective are the supervision/observation activities in preventing heat-related injury and illness in employees? Does this vary if employees are field-based and/or working at a decentralized location? How do employers deal with those challenges?

40. Employers may be required to maintain effective communication with employees whenever the initial heat trigger is met or exceeded. What methods of communication do you use?

41. An option that OSHA is considering when temperatures exceed the high-heat trigger is to require a supervisor or designee to observe employees for signs and symptoms of heat-related injury and illness. What is the maximum number of workers that you think a supervisor or designee should be responsible for supervising/observing? Is your answer dependent on work setting?

Other Administrative Controls:

42. In indoor environments, do you designate excessively high heat areas (e.g., those with ambient temperatures at or above 120°F)? If so, do you restrict access to those areas? How do you inform employees that an area is restricted due to increased risk of heat-related injury and illness? How do you monitor heat in these areas? Does this vary based on humidity levels?

43. During high heat, do you adjust work requirements or procedures (e.g., work schedule, workload, work pace)? What methods do you find to be most effective?

Personal Protective Equipment:

44. Under what conditions do you provide cooling personal protective equipment (PPE) to mitigate heat stress to your employees? What kind of cooling PPE (e.g., cooling vests, wetted garments) do you provide?

45. If you have employees that utilize PPE or clothing that contributes to heat stress (e.g., protective suits or coveralls), what procedures, if any, do you have in place to mitigate the employee's heat exposure?

High-Heat Procedures:

46. When temperatures meet or exceed the high-heat trigger, OSHA is considering requiring employers to hold pre-shift meetings to address heat hazards. Do you currently hold pre-shift meetings? What types of information do you share during these meetings? Do they include topics specific to heat safety?

47. When temperatures meet or exceed the high-heat trigger, OSHA is considering requiring employers to notify employees of heat hazards and protective measures to be used. What do you find is the most effective way to notify employees of increased risks at the work site?

Medical Treatment and Heat-Related Emergency Response:

48. Do any of your injury and illness prevention programs/plans (not just heat-related) include emergency response procedures? If so, what type of emergency response procedures do you have in place? Would these procedures need to be modified to address heat injuries and illnesses?

49. What type of emergency response procedures do you have in place to respond to an employee beginning to show signs and symptoms of heat-related injury or illness? Do you have any protocols in place to determine whether and when they could resume work after cooling down?

50. Do you have a designated person or persons who are charged with responding to emergency medical events at your worksite? What job title do they hold?

51. Has your workplace ever had an incident of serious heat-related illness that required efforts to reduce an employee's body temperature, such as pouring water and ice directly onto the employee or placing the injured employee into an ice bath? If so, was this method effective?

Worker Training:

52. If you have an existing heat safety training program, what is the scope and format of your training program? Does your training program cover any of the topics listed in Section II of the SER Background document (pages 23-24)? If so, which of those topics have been most effective in reducing heat injuries and illnesses?

53. Do all employees receive heat safety training? If not, how do you determine which employees receive training? Do all employees receive the same training? Do you provide additional heat safety training for supervisors?

54. Are workers in multi-employer work arrangements included in your heat safety training programs? How is training handled at multi-employer worksites?

55. Do you provide heat safety training to employees in languages other than English? If so, how many languages do you currently provide training in and how do you determine which languages to provide?

56. How do you determine the duration and frequency of heat safety training? Does the duration and frequency of heat safety training depend on certain conditions (e.g., increased temperatures)? How many hours annually do employees spend participating in heat safety training?

Recordkeeping:

57. Do you maintain records on the heat conditions at your workplace? How often do you record heat conditions at your workplace?

58. OSHA is considering requiring employees to maintain additional records related to heat beyond what is already captured under the existing recordkeeping requirements, as discussed in Section II of the SER Background Document (page 25). Do you currently maintain any of these records (environmental monitoring data, heat-related illnesses and injuries including those that only require first aid, environmental and work conditions at the time of heat-related injuries or illnesses, and heat acclimatization for new and returning employees)? If so, please describe the process of collecting and recording this information. If you are not currently maintaining all record types, what steps would you need to take to prepare and maintain these additional records?

Communication on Multi-Employer Work Sites:

59. If any of your worksites have multiple employers, how do you currently communicate and coordinate with other employers at your establishment? Does this communication and coordination include information about heat-related hazards? If so, how frequent, and how long are these conversations?

60. What are the current challenges in protecting workers in various types of work arrangements, including multi-employer work arrangements, from heat exposure?

Employers in States with Existing Heat Standards:

61. If your business is in a state with an existing state heat standard, which elements of your state's heat standard do you believe have been effective in reducing workers exposure to heat? Which elements have not been effective? How has compliance with your state's heat standard affected your business's operations and finances?