



January 26, 2022

The Honorable Doug Parker
Assistant Secretary
Occupational Safety and Health Administration
U.S. Department of Labor
200 Constitution Ave., NW
Washington, DC 20210

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

Dear Mr. Parker,

The National Roofing Contractors Association is submitting comments on the Occupational Safety and Health Administration's ANPRM for *Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings* published at 86 Fed. Reg. 59309 (October 27, 2021).

Established in 1886, NRCA is one of the nation's oldest trade associations and the voice of roofing professionals. NRCA's nearly 4,000 member companies represent all segments of the industry, including contractors, manufacturers, distributors, consultants and other employers in all 50 states and internationally. NRCA members are typically small, privately held companies with the average member employing 45 people and attaining sales of \$4.5 million per year. The U.S. roofing industry is an essential \$100 billion+ sector with an estimated 1.1 million employees that provides critical materials and services to ensure home and business safety.

As part of its longstanding commitment to health and safety, NRCA supports and continues to provide its members with tools to improve the health and safety of their employees, including preventing heat-related injuries and illnesses. As an interested and active stakeholder in regulatory activity, NRCA is pleased to assist OSHA in determining how best to protect roofing workers when heat-related exposures occur. NRCA respectfully submits the following comments.

Sincerely,

Reid Ribble
Chief Executive Officer

NATIONAL ROOFING CONTRACTORS ASSOCIATION

National Roofing Contractors Association (NRCA)
Comments to the Occupational Safety and Health Administration (OSHA)
for OSHA’s Advanced Notice of Proposed Rulemaking (ANPRM)

Docket No. OSHA-2021-0009

Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings

Background

The roofing industry faces significant and unique challenges in protecting the health and safety of its workers due to the inherent hazards associated with working outside at heights. Under certain situations where roofing work is performed by untrained and/or unprepared workers exposed to hot environments, they can be at risk for heat-related illness, injury or death.

NRCA appreciates OSHA’s desire to understand the impact on individual workplaces; however, the construction industry, under which the roofing industry falls, is, in this situation, best served as a group. NRCA believes that any regulatory measures to address heat hazards through the implementation of a federal standard must address the construction industry considering its unique workplace, workforce and dynamic nature. Protective measures within the standard must be practical in their approach so employers are not overwhelmed or overburdened by the requirements. Failing to recognize the need for a practical and useful approach in the construction industry will have the all-too-often effect of non-compliance in the smaller employer settings, which is the opposite impact we all want. NRCA feels strongly that if a regulatory approach occurs, to be successful, it must be kept simple by integrating the key concepts of the “Water, Rest, and Shade” axiom, *plus* Training.

Hazardous Heat and the Impact on the Construction Industry

When evaluating occupational heat-related illnesses, injuries and fatalities, the sources of the data as already identified by OSHA in the ANPRM (Docket 2021-0009) include Bureau of Labor Statistics (BLS) Injuries, Illnesses, and Fatalities (IIF) databases, OSHA injury and illness reporting data, state program data including state workers compensation program data, and insurance industry data, to name a few. CPWR – The Center for Construction Research and Training et al., in a study titled “Heat-related deaths among construction workers in the United States” reported that of the data available, construction workers experienced a little more than a third of the heat-related fatalities and at highest risk were roofers, cement masons, construction helpers and brick masons.¹

Also reported is the limited number of studies and availability of data on heat stress and heat-related illness and injuries in occupational settings, particularly in the construction industry. Although the study recommended more targeted studies, there are numerous other studies suggesting the full impact may not be understood due to underreporting or misclassification of heat-related injuries, illnesses, and deaths. Employers in all industries with fewer than 11

¹ Heat-related deaths among construction workers in the United States. Dong *et al.*, 6 (2019).

employees are not required to report heat-related illnesses, and since the prevalence of heat-related illnesses is not recorded in a systematic manner across all occupational settings, the result is a lack of quantitative data available to measure the impact of hazardous heat and qualitative data to best understand who is being impacted.

Since 1970 NRCA has sponsored a national general business insurance program with a major insurer. As part of the relationship, NRCA is given twice per year aggregate claims data from the lines of coverage, such as workers compensation and general liability. It is the largest roofing contractor business insurance program in the country. For the last 33 years, NRCA has had a risk manager on staff who has worked even more closely with the program and reports that over that time the incidents of heat stress-related workers compensation or general liability claims has never been a claims issue or concern; versus falls- or musculoskeletal-related ones. That reality doesn't negate the need for heat stress-related awareness training as it is a real roofing workplace-related exposure, and NRCA provides many educational aides to help contractors do just that. As detailed below, NRCA provides a list of training support materials, which undoubtably have helped to keep heat stress-related claims data nonexistent for the members of that program.

NRCA for decades has worked hard to use BLS data particularly as it relates to fall-related injury and illness, and year over year finds inconsistencies in roofing classifications, roofing job titles and incident detail. For example, it is unclear if the data presented are from actual roofing companies who install systems or others who are performing other types of construction work on the roof and experienced a heat-related incident. Consequently, this lack of reliability in data over time makes it difficult to determine what types of workers are experiencing these incidents. This lack of clarity in the overall data further supports aiming the rule at the entire construction industry while keeping its tenets simple, including engineering and administrative controls of water, rest, shade *plus* training, (hereinafter referred to as Water, Rest, Shade + Train), as indicated by the clear evidence from the claims data for members in NRCA's sponsored insurance program.

Business Size

In a perfect world of heat illness prevention, the industry could fully adopt the American Congress for Governmental Industrial Hygienists (ACGIH)'s Threshold Limit Values (TLV) for heat stress or the NIOSH criteria recommendations for a heat standard to include "a qualified physician or other qualified health care professional" responsible for a comprehensive medical monitoring program.² The reality within most construction and roofing employers is *much* different. NRCA members are small, privately held companies with the average member employing 45 people. At that average size, a company may be able to afford one part-time person dedicated to safety. However, most of our 4,000 contractor members fall in the \$1-3M category meaning they employ between 10-30 workers, which does not allow for that kind of outlay necessitating owners to take on the safety role *in addition* to all the other duties of payroll, scheduling, human resource management, etc.

² Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments, National Institute for Occupational Safety and Health, 87 (February 2016).

NRCA is concerned that a technically heavy standard would be difficult to understand—let alone implement—while being overly burdensome to most contractors regardless of size, and ultimately defeating the purpose of improving worker health and safety related to hazardous heat. It is well known that in the residential roofing market, work is performed mostly by companies with fewer than 10 employees, and that OSHA has a difficult time not only reaching but citing these contractors due to the transient nature of their work.

As stated previously, small contractors typically lack the dedicated personnel and expertise to develop and implement a monitoring program, much less manage and safeguard the large amounts of sensitive personal information that would be collected because of such a program.

Current and best practices in the industry include highly effective measures in preventing heat-related illness and death: water, rest, shade, and training on recognition of signs and symptoms, acclimatization and emergency response. NRCA strongly recommends that any new standard provide practical guidance supporting Water, Rest, Shade + Train as an approach so that construction firms, regardless of size can easily implement a program to prevent undesirable outcomes while allowing for reasonable implementation costs, particularly for small employers. Tustin et al. in the CDC's Morbidity and Mortality Weekly Report (July 6, 2018), "Evaluation of Occupational Exposure Limits for Heat Stress in Outdoor Workers – United State, 2011-2016," specifically highlights these protective measures to prevent occupational heat-related illnesses. A common construction metaphor is to always choose the right tools for the job instead of using everything in the toolbox; and it is applicable in this case as well.

Geographic and Regional Differences

When geographic and regional differences across the U.S. are examined, there are wide ranges of measurements including ambient air temperatures, humidity levels, and heat indices including wet bulb globe temperature (WBGT). It is inappropriate to use ambient air temperatures to trigger standard requirements because there are many factors that an ambient air temperature reading does not capture other factors such as humidity, solar load, and acclimatization. High-risk work activities in one region may be low risk in a different region based on the typical climate patterns for the region. For example, ambient air temperature of 80 degrees F in northern versus southern California can be significantly different in terms of worker heat stress.

In addition to the geographic and regional differences noted, NRCA members and the roofing industry in general must routinely consider the type of roof and conditions in which members must work when implementing proactive and protective measures against the potential for heat-related illness.

Additionally, workers who may move from one area to another to "follow the work" may have different exposures. However, as discussed in Rowlinson et al., "environmental thresholds may vary from region to region, and need to be identified based on empirical data of the regional climate and the working population."³ OSHA must take all of this into consideration before

³ Management of climatic heat stress risk in construction: A review of practices, methodologies, and future research. Rowlinson et al., 6 (2014)

promulgating a standard where ambient air temperature is used as a trigger for compliance duties.

As stated above, there are multiple tools OSHA can adopt for employers to assess the risk for heat stress and trigger protective measures for employees in a particular region. One of these tools is the Heat Index, which is the measurement of how hot it really feels when relative humidity is factored in with the ambient air temperature.⁴ There are limitations with a Heat Index measurement, however, as it fails to consider other factors beyond ambient air temperature and humidity, such as solar load, stagnate air, and work clothing. A different tool, the Wet Bulb Globe Temperature (WBGT), factors in wind, solar load, and other weather parameters, in addition to ambient air temperature and humidity.⁵ According to the National Weather Service, WBGT is “a particularly effective indicator of heat stress for active populations **such as outdoor workers** and athletes.” *Id.* (emphasis added). Likewise, a 2018 study supported the use of WBGT-based heat stress exposure limits for workplace heat hazard assessments.⁶ If WBGT is unavailable, this same study advocated for a Heat Index threshold. *Id.* OSHA should adopt a similar approach focused on geographic regions with any regulation addressing heat injury and illness in the construction industry.

OSHA’s Efforts and State Standards

OSHA’s efforts to combat heat-related illnesses, absent a federal standard, have centered around OSHA’s Heat Illness Prevention Campaign promoted primarily through their website (www.osha.gov) to employers and employees. NIOSH in a joint effort with OSHA has developed the NIOSH Heat Safety Tool, a smartphone app available free of charge, allowing users to quickly obtain temperature and heat index information for their location in real time. The app also includes hourly projections of temperatures and heat index as well as information on heat illness signs and symptoms, and emergency response. These resources are readily available to employers and easily used and understood. More detailed information is also available to employers in the OSHA Technical Manual (OTM), Section III, Chapter 4.

State standards for heat currently exist in California, Washington, Oregon, and Minnesota (indoor only). Each state has different triggers for initial activation of the protection requirements of the standards and under high heat conditions. There are similarities among the standards including training requirements and breaks, but the states differ on other areas such as hydration. The effectiveness of these standards can be attributed in part to employers’ ability to understand and follow the requirements. California’s heat standard has been in place since 2006. California continually reinforces the message with public service announcements reminding employers of the importance of protecting workers and provides a heat illness prevention e-tool. Similarly, OSHA should model any federal heat standard after OSHA’s previous standards by making as much information as possible available through e-tools, public service announcements, consultation, outreach, and education. Additional OSHA resources should include a sample Water, Rest, Shade + Training plan and a model heat illness prevention program to assist employers.

⁴ <https://www.weather.gov/safety/heat-index>.

⁵ *Id.*

⁶ See *Evaluation of Occupational Exposure Limits for Heat Stress in Outdoor Workers — United States, 2011–2016*, Tustin, *et al.* (2018).

Employer Efforts and Heat Injury and Illness Prevention Programs

Despite the absence of a federal standard, many employers routinely address heat-illness prevention as part of their overall safety and health programs. NRCA offers free to its members the NRCA Safety Manual, which houses a chapter on heat stress tailorable to the contractor. In addition, NRCA offers Toolbox Talks, the Pocket Guide to Safety, Targeted Safety and Health Training Series on Heat Stress, Professional Roofing Magazine articles and numerous social media-related posts on heat stress-related matters. Cooling vests, bandanas, and hardhat shades are a few wearable options now available to employers to help prevent heat illness.

Adjusting work schedules, for example, may provide additional reduction of exposures to high heat at peak hours of the day, and roofing contractors nationwide employ nighttime work or staggered shifts to avoid midday heat where appropriate.

Acclimatization (Outdoor)

Numerous studies regarding the human body's ability to adapt physiologically to heat have shown that workers who are able to acclimatize to high heat environments are less likely to suffer from heat stress resulting in heat-related illnesses.⁷ Acclimatization improves the body's ability to have a "more efficient heat dissipation system" and "reserve sodium in sweat" and thereby resulting in a worker being more tolerant to heat stress.⁸

Acclimatization occurs through a gradual exposure of the worker by increasing the time in a high heat working environment over a period of days. The number of days that are recommended vary from study to study and from OSHA to NIOSH however the number of days appears to be from 3 to 7 days. *Id.* Morrissey et al. recommended that employers should acclimatize workers by "create[ing] and implement[ing] a gradual, progressive [heat acclimatization] HA program (5 – 7 days) to minimize the effects of heat stress."⁹

As stated earlier, the construction industry requires a practical approach to acclimatization as part of any regulatory standard. And, as discussed above, any standard must be appropriate in its approach by taking into consideration regional climate differences and the workforce population.¹⁰

Planning and Responding to Heat-Related Illness Emergencies

Preparedness is key regardless of the type of emergency. This is particularly important and challenging in the construction industry where job locations and jobsite personnel change with some regularity. Familiarity with the location of emergency care is extremely important and an integral part of a project's emergency action plan. Training is a key component to planning for an emergency response, and heat-related emergencies are no exception. Training on a heat emergency response plan should include recognition and risks of heat-related illness, prevention,

⁷ Management of climatic heat stress risk in construction: A review of practices, methodologies, and future research, Rowlinson, *et al.*, 6 (2014).

⁸ *Ibid.*

⁹ Heat Safety in the Workplace: Modified Delphi Consensus to Establish Strategies and Resources to Protect the US Workers, Morrissey, *et al.*, 6 (2021)

¹⁰ Rowlinson, *et al.*, Management of climatic heat stress, 6 (2014)

and the “buddy system,” where trained jobsite managers/supervisors and workers are paired to look after each other, react appropriately and report concerns.

Worker Training and Engagement

Effective training and education cannot be overstated in its importance to the success of any occupational safety and health program, as stated throughout these comments. Of equal importance is the engagement of employees in safety and health programs and practices which instills a sense of ownership where employees help lead and drive safety in the workplace daily.

Worker and supervisor training for heat-related illnesses should include symptom recognition and first aid, prevention measures designed to reduce heat stress through engineering and administrative controls including water-rest-shade+train. The training would include such things as acclimatization, procedures for responding to emergencies¹¹ and how to use the NIOSH/OSHA Heat Index app.

As detailed above, NRCA supports training and education for its members across a wide range of safety and health areas and seeks to provide the most comprehensive safety training available in the roofing industry to provide the safest work environment possible.

Conclusion

NRCA appreciates the opportunity to provide these comments as an interested stakeholder in this regulatory activity. As stated throughout these comments, any regulatory standard addressing occupational heat-related illnesses must apply a practical approach to the roofing industry, and the entire construction industry. NRCA cannot stress enough that if a regulatory approach occurs, it must be simple by integrating and adopting the “Water, Rest, Shade + Training” approach.

To the extent that NRCA through these comments can assist OSHA in determining how best to protect roofing workers from potentially hazardous heat and the nature and effectiveness of interventions and controls used to prevent heat-related injury, illnesses, and death, NRCA respectfully submits these comments and desires to remain engaged in the regulatory process going forward.

¹¹ Evaluation of Occupational Exposure Limits for Heat Stress in Outdoor Workers — United States, 2011–2016, Tustin, *et al.* (2018).

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