

**ATTORNEYS GENERAL OF NEW YORK, CALIFORNIA, ILLINOIS,
MARYLAND, MASSACHUSETTS, NEW JERSEY, and PENNSYLVANIA**

February 9, 2023

Via Email

Douglas L. Parker
Assistant Secretary of Labor for Occupational Safety and Health
United States Department of Labor
200 Constitution Avenue NW
Washington, DC 20210

**Re: Petition for an Emergency Temporary Standard for
Occupational Heat Exposure for Outdoor and Indoor Workers**

Dear Assistant Secretary Parker:

The undersigned Attorneys General of New York, California, Illinois, Maryland, Massachusetts, New Jersey, and Pennsylvania hereby petition the Occupational Safety and Health Administration (OSHA) to issue an emergency temporary standard for occupational heat exposure pursuant to Section 6(c) of the Occupational Safety and Health Act, 29 U.S.C. § 655(c), beginning May 1, 2023. Under Section 6(c), OSHA is required to promulgate an emergency temporary standard if it finds (1) workers are exposed to a grave danger in the workplace, and (2) an emergency standard is necessary to protect workers from such danger. As this petition explains, both factors are undeniably met.

First, extreme workplace heat poses a grave danger to the health and safety of tens of millions of outdoor and indoor workers in our states and across the nation. Because climate change is spurring longer, more intense, and more frequent heat waves, workers are increasingly exposed to dangerous levels of heat and humidity, along with the secondary effects of extreme heat, such as poor air quality. Exposure to extreme heat can cause a range of acute and chronic heat-related illnesses, and extreme heat is responsible for dozens of workplace deaths each year, a number that is likely significantly undercounted. Although nearly all outdoor and many indoor workers are susceptible to occupational heat illness, workers in certain industries—including agriculture, construction, postal and delivery services, warehousing, and food services—are particularly vulnerable to heat stress due to the combined effects of their work environment, the physical nature of their work, and prevailing socioeconomic factors. Indeed, occupational heat exposure is an issue of environmental and racial justice, as people of color and low-wage workers are disproportionately burdened by heat stress in the workplace.

Second, an emergency temporary standard is necessary to abate and protect workers from the grave danger of extreme workplace heat. In 27 states and territories, OSHA is the only entity authorized to issue workplace health and safety standards that cover both public and private sector workers. Additionally, in many states, including New York, Illinois, Massachusetts, and New Jersey, OSHA has exclusive authority to regulate private sector health and safety. California, Oregon, and Washington—three states that do have independent rulemaking authority—have already identified extreme heat as a grave danger in the workplace and found it necessary to promulgate emergency standards, and ultimately permanent standards, to protect workers from that danger.

In addition, enforcement of workplace heat hazards under the General Duty Clause of the Occupational Safety and Health Act, 29 U.S.C. § 654(a)(1), is insufficient to protect workers from the grave danger of extreme heat. As OSHA has acknowledged, enforcement actions under the General Duty Clause are almost always unsuccessful because without a regulatory standard for heat, it is difficult for the Agency to prove in an enforcement proceeding that working in extreme heat is hazardous.¹ Although our states strongly support OSHA's proposed rulemaking for a permanent standard,² that process is expected to take several years, leaving millions of outdoor and indoor workers exposed to dangerous levels of heat in the interim. An emergency temporary standard would fill this regulatory void during the hottest months of the year when workers are most likely to experience extreme workplace heat exacerbated by climate change.

Accordingly, to protect workers from heat-related injury, illness, and even death, we urge OSHA to issue an emergency temporary standard for occupational heat exposure that applies when the heat index reaches 80°F—a temperature associated with increased rates of serious heat-related illnesses—and requires employers to take targeted steps to prevent harm to their workers, such as providing ample water, rest breaks, and access to cool or shaded areas. We urge OSHA to promulgate this standard by May 1, 2023, so it is in place this summer.

¹ See *Sec'y of Lab. v. A.H. Sturgill Roofing, Inc.*, No. 13-0224, 2019 WL 1099857 (OSHR Feb. 28, 2019).

² On January 26, 2022, the Attorneys General of New York, California, Maryland, Massachusetts, New Jersey, and Pennsylvania submitted a comment letter to OSHA on its advance notice of proposed rulemaking for heat injury and illness prevention in outdoor and indoor work settings, 86 Fed. Reg. 59,309 (Oct. 27, 2021), urging OSHA to promulgate permanent heat standards for outdoor and indoor workers.

Legal Framework

Section 6(c) of the Occupational Safety and Health Act imposes an affirmative obligation on OSHA to issue an emergency temporary standard if (1) “employees are exposed to grave danger from exposure to substances or agents determined to be toxic or physically harmful or from new hazards,” and (2) “such emergency standard is necessary to protect employees from such danger,” 29 U.S.C. § 655(c)(1). The determination of what level of risk constitutes a “grave danger” is a “policy consideration that belongs, in the first instance, to the Agency.”³ A “grave danger” under Section 6(c) of the Occupational Safety and Health Act represents a risk greater than a “significant risk,” the threshold showing for OSHA to promulgate a permanent standard under Section 6(b) of the Act, 29 U.S.C. § 655(b).⁴ As with any determination of risk, OSHA must support its findings with “substantial evidence in the record considered as a whole.”⁵

Upon publishing an emergency temporary standard, OSHA must commence a rulemaking for a permanent standard, with the emergency standard serving as the proposed rule.⁶ The emergency temporary standard remains in effect until it is superseded by a permanent standard, a process contemplated by the Occupational Safety and Health Act to occur within six months.⁷ The Act is silent on OSHA’s authority to extend or renew an emergency temporary standard past the six-month deadline if a grave danger remains and the permanent rule is not yet finalized.⁸

³ *Asbestos Info. Ass’n/N. Am. v. OSHA*, 727 F.2d 415, 425 (5th Cir. 1984) (accepting OSHA’s determination that 80 lives at risk over six months was a grave danger); *see also Indus. Union Dep’t, AFL-CIO v. Am. Petroleum Inst.*, 448 U.S. 607, 655 n.62 (1980).

⁴ *See Int’l Union, United Auto., Aerospace & Agric. Implement Workers of Am., UAW v. Donovan*, 590 F. Supp. 747, 755–56 (D.D.C. 1984), *adopted*, 756 F.2d 162 (D.C. Cir. 1985); *see also Indus. Union Dep’t, AFL-CIO*, 448 U.S. at 640 n.45 (noting the distinction between the standard for risk findings for permanent standards and emergency temporary standards).

⁵ 29 U.S.C. § 655(f).

⁶ *Id.* § 655(c)(2)–(3).

⁷ *Id.* § 655(c). OSHA’s rulemaking process generally consists of seven stages and can take more than ten years to complete, making this six-month turnaround difficult for the Agency to meet. *See The OSHA Rulemaking Process*, Occupational Safety & Health Admin. (last updated Oct. 15, 2012), https://www.osha.gov/sites/default/files/OSHA_FlowChart.pdf.

⁸ However, in 1974, the Fifth Circuit held that OSHA was authorized to amend an emergency temporary standard without going through the formal rulemaking process, stating that “it is inconceivable that Congress, having granted the Secretary the authority to react quickly in fast-breaking emergency situations, intended to limit his ability to react to developments subsequent to his initial response.” *Fla. Peach Growers Ass’n, Inc. v. U.S. Dep’t of Lab.*, 489 F.2d. 120, 127 (5th Cir. 1974). The court further noted that, in the context of amending an emergency temporary standard, OSHA’s “adherence to [formal rulemaking] procedures would not be in the best interest of employees, whom the Act is designed to protect.” *Id.* Read broadly, *Fla. Peach Growers Ass’n* indicates that OSHA may have authority to adapt to the exigencies of a situation by extending or

OSHA, however, has accepted compliance with emergency temporary standards as satisfying employers' obligations under the General Duty Clause well past the six-month mark. For instance, in June 2021, OSHA adopted the Healthcare Emergency Temporary Standard (Healthcare ETS) to protect healthcare workers from COVID-19.⁹ Six months later, in December 2021, OSHA announced that it was withdrawing the Healthcare ETS because "a final rule [could not] be completed in a timeframe approaching the one contemplated by the [Occupational Safety and Health] Act."¹⁰ As part of its announcement, OSHA encouraged healthcare employers to continue to implement the emergency standard's requirements as the Agency worked toward a permanent standard. OSHA also stated that the Agency would accept compliance with the terms of the Healthcare ETS as satisfying employers' related obligations under the General Duty Clause and OSHA's respiratory and personal protective equipment standards.¹¹ To date, OSHA's rulemaking for a permanent standard remains ongoing.¹²

As this petition will demonstrate, extreme heat is a grave danger to the health and safety of outdoor and indoor workers, especially during the summer months, and an emergency temporary standard is necessary to protect workers from such danger. OSHA therefore has an affirmative obligation to issue an emergency temporary standard for occupational heat exposure under Section 6(c) of the Occupational Safety and Health Act, and we urge OSHA to do so by May 1, 2023.

Argument

I. Extreme Heat Is a Grave Danger to the Health and Safety of Outdoor and Indoor Workers.

Ample evidence shows that extreme heat is a grave danger to the health and safety of outdoor and indoor workers in a range of industries. As climate change yields higher temperatures and more frequent and intense heat waves, these dangers will only increase, putting millions of workers at greater risk for heat-related illness and death. To mitigate these risks, OSHA should issue a finding of a grave danger and promulgate an emergency temporary standard for extreme heat for summer 2023.

renewing an emergency temporary standard past the six-month deadline, so long as it is in the best interest of employees.

⁹ 86 Fed. Reg. 32,376 (June 21, 2021).

¹⁰ *Statement on the Status of OSHA COVID-19 Healthcare ETS*, Occupational Safety & Health Admin. (Dec. 27, 2021), <https://www.osha.gov/coronavirus/ets>.

¹¹ *See id.*

¹² *See* Occupational Safety & Health Admin., COVID-19 Healthcare Rulemaking Docket, OSHA-2020-0004, <https://www.regulations.gov/docket/OSHA-2020-0004>; 87 Fed. Reg. 16,426 (Mar. 23, 2022).

A. Extreme Heat Events Are Increasing in Frequency, Duration, and Severity due to Climate Change.

Summer 2022—the third-hottest summer ever recorded in the United States—brought soaring temperatures and unrelenting heat waves, shattering over 7,000 daily high temperature records across the country.¹³ In mid-June, temperatures climbed into the nineties in most of Illinois, Indiana, and Ohio,¹⁴ while in Minnesota, triple-digit temperatures shattered windshields and buckled roadways.¹⁵ On July 20, 2022, the National Weather Service issued excessive heat warnings and heat advisories for 28 states, stretching from California to New Hampshire and affecting over 100 million people.¹⁶ In the Northeast, Newark experienced five consecutive days with temperatures at or above 100°F, the longest streak in the city’s history, while Boston and Philadelphia sweltered at 100°F and 99°F, respectively.¹⁷

August 2022 was the hottest month ever recorded in North America.¹⁸ Over the course of the month, California, Idaho, Nevada, Oregon, and Washington each

¹³ *U.S. Sweltered Through Third-Hottest Summer on Record*, Nat’l Oceanic & Atmospheric Admin. (Sept. 9, 2022), <https://www.noaa.gov/news/us-sweltered-through-third-hottest-summer-on-record>; Harry Stevens & Jason Samenow, *Maps Show Where Extreme Heat Shattered 7,000 Records This Summer*, Wash. Post (Sept. 13, 2022), https://www.washingtonpost.com/climate-environment/interactive/2022/temperature-records-summer/?itid=1k_interstitial_manual_6; Zach Rosenthal & Kasha Patel, *Earth Just Experienced One of Its Warmest Summers on Record*, Wash. Post (Sept. 15, 2022), <https://www.washingtonpost.com/climate-environment/2022/09/15/hottest-summer-august-world/>. NASA reported that June through August of 2022 tied 2020 for the warmest summer worldwide in records dating back to 1880, while NOAA reported that the meteorological summer tied for the fifth warmest worldwide in 143 years of records. This discrepancy results from NASA’s data set, which has more inputs from the Arctic and Antarctic regions, areas that are warming faster than other parts of the globe. *Id.*

¹⁴ Kathleen Foody, *Heat Wave Keeps Midwest and South in Its Sticky Grip*, Associated Press (June 15, 2022), <https://apnews.com/article/illinois-weather-heat-waves-40c8f662a2a1a0a9113ad2842c5a6b16>.

¹⁵ David Schuman, *Extreme Heat Shatters Car Windows, Buckles Roads*, CBS News: Minn. (June 20, 2022), <https://www.cbsnews.com/minnesota/news/extreme-heat-shatters-car-windows-buckles-roads/>.

¹⁶ Matthew Cappucci & Meryl Kornfield, *Extreme Heat Prompts Alerts in 28 States as Texas, Oklahoma Hit 115*, Wash. Post (July 20, 2022), <https://www.washingtonpost.com/climate-environment/2022/07/20/heatwave-us-record-oklahoma-texas/>.

¹⁷ Ali Watkins, *Heat Waves Sweep the Northeast over a Sweltering Weekend*, N.Y. Times (Aug. 3, 2022), <https://www.nytimes.com/2022/07/24/nyregion/heat-wave-us.html>.

¹⁸ Rosenthal & Patel, *supra* note 13; *U.S. Sweltered Through Third-Hottest Summer on Record*, Nat’l Oceanic & Atmospheric Admin., *supra* note 13.

experienced their hottest nighttime temperatures on record.¹⁹ In early September, a heat dome settled over the western United States, resulting in scorching temperatures that fueled wildfires and pushed power grids to their limits.²⁰ On September 6, 2022, more than 61 million people were under excessive heat advisories, watches, and warnings according to the National Weather Service, and several California cities recorded all-time high temperatures, including Sacramento at 116 degrees.²¹ In total, the summer saw 27 all-time high temperature records.²²

But summer 2022 was no anomaly. Summer 2021 was the hottest summer ever recorded in the contiguous United States,²³ and July 2021 was the world's hottest month on record.²⁴ Globally, the year 2020 tied with 2016 for the hottest year on record (1.84°F warmer than the baseline mean from 1951 to 1980), and the last nine years have been the nine hottest on record, a trend that is expected to continue.²⁵

The increasing severity of extreme heat events is a hallmark of climate change.²⁶ Heat waves occur five times more often than they did prior to 1900, and they are increasing in duration and intensity, too.²⁷ A nine-day heat wave across

¹⁹ *Id.*

²⁰ See Sara E. Pratt, *A Long-Lasting Western Heatwave*, NASA: Earth Observatory (Sept. 10, 2022), <https://earthobservatory.nasa.gov/images/150318/a-long-lasting-western-heatwave>. According to NOAA, a heat dome occurs when high-pressure atmospheric conditions trap hot ocean air like a lid or a cap. Because climate change is affecting the Pacific Ocean's temperature gradient, it is likely that heat domes will become increasingly common. See *What Is a Heatdome?*, Nat'l Oceanic & Atmospheric Admin., <https://oceanservice.noaa.gov/facts/heat-dome.html> (last updated Jan. 20, 2023).

²¹ See Pratt, *supra* note 20.

²² Stevens & Samenow, *supra* note 13.

²³ *Summer 2021 Neck and Neck with Dust Bowl Summer for Hottest on Record*, Nat'l Oceanic & Atmospheric Admin. (Sept. 13, 2021), <https://www.noaa.gov/news/summer-2021-neck-and-neck-with-dust-bowl-summer-for-hottest-on-record>.

²⁴ *It's Official: July Was Earth's Hottest Month on Record*, Nat'l Oceanic & Atmospheric Admin. (Aug. 13, 2021), <https://www.noaa.gov/news/its-official-july-2021-was-earths-hottest-month-on-record>.

²⁵ Press Release, Nat'l Aeronautics & Space Admin., NASA Says 2022 Fifth Warmest Year on Record, Warming Trend Continues (Jan. 12, 2023), <https://www.nasa.gov/press-release/nasa-says-2022-fifth-warmest-year-on-record-warming-trend-continues>; Valérie Masson-Delmotte et al., Intergovernmental Panel on Climate Change, AR6 Climate Change 2021: The Physical Science Basis, SPM-10 (2021), https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM_final.pdf.

²⁶ Colin Raymond et al., *Regional and Elevational Patterns of Extreme Heat Stress Change in the US*, 17 *Env't Rsch. Letters* 64,046 (2022).

²⁷ See Masson-Delmotte et al., *supra* note 25; Press Release, Nat'l Aeronautics & Space Admin., 2021 Tied for 6th Warmest Year in Continued Trend, NASA Analysis Shows (Jan. 13, 2022),

Northern California, Oregon, Washington, and British Columbia in July 2021 claimed hundreds of lives and sparked or contributed to 93 large wildfires.²⁸ Climatologists characterized that heat wave as “surprising and shaking” and “way beyond the upper bound” of modern climatic history.²⁹ According to researchers at Columbia University, the Pacific Northwest heat wave would have been “virtually impossible” in 1950, and the likelihood of such regional temperature anomalies is projected to increase rapidly with further global warming.³⁰

In many parts of the United States, climate change is also associated with higher humidity, further compounding the dangers of extreme heat.³¹ By the mid-21st century, the annual number of days with a dangerously high heat index (a measurement of the combined effects of temperature and relative humidity) is expected to either double or triple compared to a 1971 to 2000 baseline, depending on either a high or low emissions scenario.³² Because the heat index reflects what the temperature “feels like,” it is generally a better indicator of the potential for heat stress than the ambient temperature.³³

Relatedly, as global temperatures rise, areas of the contiguous United States will face more days with dangerously high wet-bulb globe temperatures (WBGTs) compared to locations at similar latitudes across the globe.³⁴ Measured with a specialized thermometer, the WBGT accounts for temperature, humidity, radiation, and windspeed and has been adopted as the basis for health guidelines for military training and outdoor sports.³⁵ A WBGT of 35°C (or 95°F) is an upper limit to survivable temperatures because at that point, environmental conditions are too hot for bi-directional methods of thermoregulation and too humid for evaporative

<https://www.nasa.gov/press-release/2021-tied-for-6th-warmest-year-in-continued-trend-nasa-analysis-shows>.

²⁸ Samuel Bartusek, Kai Kornhuber & Mingfang Ting, *2021 North American Heatwave Amplified by Climate Change-Driven Nonlinear Interactions*, 12 *Nature Climate Change* 1143 (2022).

²⁹ Bibi van der Zee, *More Than 400 Weather Stations Beat Heat Records in 2021*, *The Guardian* (Jan. 7, 2022), <https://www.theguardian.com/world/2022/jan/07/heat-records-broken-all-around-the-world-in-2021-says-climatologist>; Jeff Masters, *NOAA, NASA Name 2021 Sixth-Hottest Year on Record*, *Yale Climate Connections* (Jan. 13, 2022), <https://yaleclimateconnections.org/2022/01/noaa-nasa-name-2021-sixth-hottest-year-on-record/>.

³⁰ Bartusek, Kornhuber & Ting, *supra* note 28.

³¹ Kristina Dahl et al., *Increased Frequency of and Population Exposure to Extreme Heat Index Days in the United States During the 21st Century*, 1 *Env't Rsch. Comm.* 75,002 (2019).

³² *Id.*

³³ See *Heat Forecast Tools*, Nat'l Weather Serv., <https://www.weather.gov/safety/heat-index> (last visited Jan. 26, 2023).

³⁴ Dawei Li, Jiacan Yuan & Robert E. Kopp, *Escalating Global Exposure to Compound Heat-Humidity Extremes with Warming*, 15 *Env't Rsch. Letters* 64,003 (2020).

³⁵ *Id.*

cooling, or sweating.³⁶ In other words, at a WBGT of 35°C, it is too hot for the body to cool itself off.

Many locations on the Gulf Coast of the United States, including in east Texas, Louisiana, Mississippi, Alabama, and the Florida panhandle, have already recorded WBGT readings of 31°C to 33°C.³⁷ Even at a lower WBGT of 26°C (about 79°F), people with pre-existing health conditions, the elderly, and outdoor laborers are at high risk of heat stress.³⁸

Extreme heat events also exacerbate the urban heat island effect, a phenomenon where urbanized areas experience higher temperatures than surrounding areas, primarily due to the built environment's retention of heat.³⁹ In particular, cement, pavement, dark rooftops, and other non-vegetated surfaces in cities absorb and store heat, which is then released gradually at night.⁴⁰ Daytime temperatures in urban areas are on average 1°F to 6°F higher than in rural areas, while nighttime temperatures can be as much as 22°F higher.⁴¹ For people without access to air-conditioning, limited nighttime cooling can inhibit their ability to cool down and recover from daytime heat exposure.⁴² While virtually all cities across the United States experience the urban heat island effect, it is most pronounced in humid regions (primarily in the eastern United States) and in cities with larger and denser populations.⁴³

Even within cities, the inequitable distribution of tree canopy and greenspaces can cause neighborhood-level hotspots known as “intra-urban” heat islands.⁴⁴ In many U.S. cities, temperatures can change several degrees within a

³⁶ Steven C. Sherwood & Matthew Huber, *An Adaptability Limit to Climate Change due to Heat Stress*, 107 Proc. Nat'l Acads. of Sci. 9552 (2010).

³⁷ Colin Raymond, Tom Matthews & Radley M. Horton, *The Emergence of Heat and Humidity Too Severe for Human Tolerance*, 6 Sci. Advances 19 (2020).

³⁸ *Id.*

³⁹ See *Heat Island Effect*, U.S. Env't Prot. Agency, <https://www.epa.gov/heatislands> (last updated Jan. 13, 2023).

⁴⁰ *Understanding the Urban Heat Island Index*, Cal. Env't Prot. Agency, <https://calepa.ca.gov/climate/urban-heat-island-index-for-california/understanding-the-urban-heat-island-index/> (last visited Jan. 31, 2023).

⁴¹ *Id.*

⁴² *Id.*

⁴³ Kenneth Hibbard et al., U.S. Global Change Rsch. Program, *Climate Science Special Report: Fourth National Climate Assessment, Changes in Land Cover and Terrestrial Biogeochemistry* (2017), <https://science2017.globalchange.gov/chapter/10/>.

⁴⁴ *Heat Islands and Equity*, U.S. Env't Prot. Agency, <https://www.epa.gov/heatislands/heat-islands-and-equity> (last updated Dec. 12, 2022); Jeremy S. Hoffman, Vivek Shandas & Nicholas

few blocks depending on whether a neighborhood is primarily paved or if it has trees or other greenery.⁴⁵ Intra-urban heat islands tend to be lower-income and have higher populations of people of color.⁴⁶

Indeed, there is a correlation between tree canopy and the racially discriminatory practice known as redlining. Redlining stems from practices adopted by the Home Owners' Loan Corporation (HOLC), which was created by Congress in 1933 to assist Americans struggling to pay mortgages. To guide lending criteria, the HOLC developed neighborhood appraisal maps, which ranked the perceived risk of investing using a color-coded scale of "A" (green), "B" (blue), "C" (yellow), and "D" (red).⁴⁷ Areas that were given an "A" grade were characterized by U.S.-born white populations and newer housing, while areas that were given a "D" grade were characterized by high numbers of foreign-born residents, racial and ethnic minority populations, and older housing. These areas were almost always viewed as "hazardous" and outlined in red—or redlined—on HOLC appraisal maps. A recent peer-reviewed study examined the correlation between tree canopy in 37 cities (including Los Angeles and Sacramento) and the HOLC rankings across city neighborhoods. Currently, the same neighborhoods that received an "A" grade have nearly twice as much tree canopy as communities that were redlined and given a "D" grade.⁴⁸ With the exception of Seattle, in the 37 cities in the study, "[t]ree canopy today is almost always in rank order of HOLC grades."⁴⁹

Extreme heat is also linked to poor air quality, especially in urban areas and environmental justice communities that are already overburdened by air pollution.⁵⁰ Air often becomes stagnant during heat waves, trapping pollutants like

Pendleton, *The Effects of Historical Housing Policies on Resident Exposure to Intra-Urban Heat: A Study of 108 US Urban Areas*, 8 *Climate* 12 (2020).

⁴⁵ Ellen L. Mecray et al., U.S. Global Change Rsch. Program, Fourth National Climate Assessment, Northeast (2018), <https://nca2018.globalchange.gov/chapter/18/>; Joyce Klein Rosenthal et al., *Intra-Urban Vulnerability to Heat-Related Mortality in New York City, 1997–2006*, 30 *Health & Place* 45, 45–47 (2014).

⁴⁶ *Heat Islands and Equity*, U.S. Env't Prot. Agency, *supra* note 44.

⁴⁷ Dexter Locke et al., *Residential Housing Segregation and Urban Tree Canopy in 37 US Cities*, SocArXiv 3–4 (2020).

⁴⁸ *Id.* at 4; *see also* Ian Leahy & Yaryna Serkez, *Since When Have Trees Existed Only for Rich Americans?*, N.Y. Times: Op. (July 4, 2021), <https://www.nytimes.com/interactive/2021/06/30/opinion/environmental-inequity-trees-critical-infrastructure.html>.

⁴⁹ Locke et al., *supra* note 47, at 9.

⁵⁰ *See, e.g.*, Renee N. Salas, *Environmental Racism and Climate Change—Missed Diagnoses*, *New Eng. J. Med.: Persp.* (Sept. 9, 2021), <https://www.nejm.org/doi/full/10.1056/NEJMp2109160>; Karishma S. Becha, *The Impact of Extreme Heat on Environmental Justice Communities in California: Assessing Equity in Climate Action Plans*, Univ. of S.F.: Master's Projects and Capstones 1018 (2020), <https://repository.usfca.edu/cgi/viewcontent.cgi?article=2199&context=capstone>.

ground-level ozone and particulate matter, and high temperatures accelerate the formation of these pollutants.⁵¹ Ground-level ozone, or smog, forms when heat and sunlight trigger a chemical reaction between nitrogen oxides and volatile organic compounds, two pollutants emitted from sources such as automobiles, industrial facilities, and oil and gas extraction sites.⁵² Ground-level ozone can aggravate chronic respiratory conditions, such as asthma, emphysema, and chronic bronchitis, and cause symptoms such as coughing, difficulty breathing, lung inflammation, and increased susceptibility to infection.⁵³ People at the highest risk include children, older adults, people who are active outdoors, outdoor workers,⁵⁴ and low-income individuals.⁵⁵ Chronic ozone exposure is also linked to premature death from respiratory causes.⁵⁶

In addition, extreme heat is fueling wildfires, especially across the western United States,⁵⁷ which worsen air quality by generating particulate matter, or soot.⁵⁸ Fine particulate matter (PM_{2.5}) can penetrate deep into the lungs and enter the bloodstream, predisposing people to infectious diseases and aggravating chronic respiratory conditions.⁵⁹ A 2021 study found that between March and December

⁵¹ See Christopher G. Nolte et al., U.S. Global Change Rsch. Program, Fourth National Climate Assessment, Air Quality (2018), <https://nca2018.globalchange.gov/chapter/13/>.

⁵² *Id.*

⁵³ See *Health Effects of Ozone Pollution*, U.S. Env't Prot. Agency, <https://www.epa.gov/ground-level-ozone-pollution/health-effects-ozone-pollution> (last updated June 14, 2022).

⁵⁴ *Id.*

⁵⁵ Alejandra Borunda, *In California, Extreme Heat and Ozone Pollution Hit Poor Communities Hardest*, Nat'l Geographic (May 25, 2021), <https://www.nationalgeographic.com/environment/article/-in-california-extreme-heat-and-ozone-pollution-hit-poor-communities-hardest>.

⁵⁶ See, e.g., Michael Jerrett et al., *Long-Term Ozone Exposure and Mortality*, 360 New Eng. J. Med. 1085 (2009); Geri Piazza, Nat'l Insts. of Health, *Air Pollution Linked to Risk of Premature Death* (Jan. 9, 2018), <https://www.nih.gov/news-events/nih-research-matters/air-pollution-linked-risk-premature-death>.

⁵⁷ Diana Leonard, *"Very Dangerous" Heat May Reignite Fire Season in Western U.S.*, Wash. Post (Aug. 29, 2022), <https://www.washingtonpost.com/climate-environment/2022/08/29/western-california-heatwave-fires-forecast/>; Matthew Cappucci, Diana Leonard & Jason Samenow, *Punishing Heat Wave in West Sets Records, Fuels Fires*, Wash. Post (Sept. 3, 2022), <https://www.washingtonpost.com/climate-environment/2022/09/02/western-heatwave-california-fire-drought/>.

⁵⁸ *Wildfires, Extreme Heat Causing Health Harms*, Harv. T.H. Chan Sch. of Pub. Health, <https://www.hsph.harvard.edu/news/hsph-in-the-news/wildfires-extreme-heat-causing-health-harms/> (last visited Jan. 23, 2022).

⁵⁹ *Health and Environmental Effects of Particulate Matter (PM)*, U.S. Env't Prot. Agency, <https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm> (last updated May 26, 2021).

2020, thousands of COVID-19 cases and deaths in California, Oregon, and Washington may have been due to increases in PM_{2.5} from wildfire smoke.⁶⁰ Indeed, PM_{2.5} accounts for a majority of health impacts from air pollution in the United States, and even small changes in concentrations can have significant health effects.⁶¹

As the effects of climate change intensify, extreme heat events will grow in frequency, duration, and severity, resulting in increases in illness and death from both heat exposure and the secondary effects of extreme heat, such as air pollution and wildfires. As explained below, extreme heat poses a grave danger to millions of workers in our states and across the country exposed to heat in the workplace.

B. Workplace Exposure to Extreme Heat Can Cause a Range of Heat-Related Illnesses and Even Death.

While extreme heat threatens the health and safety of the population at large, it is especially dangerous for workers due to the combined effects of environmental temperature and metabolic stress.⁶² Physical labor increases the body's metabolic heat load, which is compounded by environmental heat sources, such as the ambient temperature, direct sunlight, or radiant heat from machinery. The body dissipates heat through evaporative cooling (or sweating), but as environmental temperatures rise, the body's ability to cool itself off decreases.⁶³ High humidity further limits evaporative cooling.⁶⁴

Exposure to extreme heat can cause a range of heat-related illnesses. The most grave form of heat-related illness is heat stroke, which progresses quickly and is a medical emergency; the internal body temperature can rise to 106°F or higher within 10 to 15 minutes of onset.⁶⁵ Heat stroke is accompanied by serious, life-threatening symptoms, including confusion, dizziness, hallucinations, coma, and seizures.⁶⁶ Survivors of heat stroke remain at high risk for organ failure or death

⁶⁰ Xiaodan Zhou et al., *Excess of COVID-19 Cases and Deaths due to Fine Particulate Matter Exposure During the 2020 Wildfires in the United States*, 13 *Sci. Adv.* 7 (2021).

⁶¹ Nolte et al., *supra* note 51.

⁶² See *Heat Stress—Heat Related Illness*, Nat'l Inst. for Occupational Safety & Health, <https://www.cdc.gov/niosh/topics/heatstress/heatrelillness.html> (last updated May 13, 2022); *Climate Change Indicators: Heat-Related Illnesses*, U.S. Env't Prot. Agency, <https://www.epa.gov/climate-indicators/heat-related-illnesses> (last updated Apr. 19, 2022).

⁶³ *Id.*

⁶⁴ See, e.g., Jorge E. Gonzalez et al., *New York City Panel on Climate Change 2019 Report Chapter 2: New Methods for Assessing Extreme Temperatures, Heavy Downpours, and Drought*, 1439 *Annals of N.Y. Acad. of Scis.* 30 (2019).

⁶⁵ *Id.*

⁶⁶ *Id.*

within a year.⁶⁷ Rhabdomyolysis, which is the rapid death of muscle tissue, emerges after prolonged physical labor or exertion in the heat.⁶⁸ When muscle tissue breaks down and ruptures, electrolytes and proteins are released into the bloodstream and can cause irregular heart rhythms, seizures, and kidney damage.⁶⁹

Even comparatively milder heat-related illnesses can rapidly progress into more grave conditions and worsen underlying health conditions.⁷⁰ Heat exhaustion, which often results from a lack of hydration and shade, is characterized by a core temperature of less than 104°F and occurs when the body loses critical amounts of water and salt, particularly through excessive sweating.⁷¹ Symptoms of heat exhaustion are often nonspecific, such as headache, nausea, dizziness, and weakness, which can make heat exhaustion difficult to identify and diagnose.⁷² Heat syncope, or fainting, is most likely to occur when unacclimatized workers are first exposed to heat stress.⁷³ Heat cramps, which are also common for unacclimatized workers, are painful cramps that primarily occur in individuals performing vigorous physical work or exercise in heat stress conditions.⁷⁴ While potentially serious, these illnesses are readily treatable by removing the individual from heat and providing hydration, ideally with electrolytes.⁷⁵ Finally, sunburn and heat rash are skin irritations caused by heat exposure, which may also be antecedents to more serious conditions, including skin cancer.⁷⁶

In addition to these acute illnesses, repeated exposure to extreme heat poses significant long-term health risks. For instance, chronic heat stress may be associated with the development of chronic kidney disease of nontraditional origin (CKDnt), which is a kidney disease in patients who do not have the usual risk factors for the disease such as diabetes, hypertension, cardiovascular disease, or old

⁶⁷ *Id.*

⁶⁸ Brenda Jacklitsch et al., Nat'l Inst. for Occupational Safety & Health, DHHS Pub. No. 2016-106, Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments 52 (2016), <https://www.cdc.gov/niosh/docs/2016-106/pdfs/2016-106.pdf>.

⁶⁹ *Id.*

⁷⁰ See *Heat Stress—Heat Related Illness*, Nat'l Inst. for Occupational Safety & Health, *supra* note 62; *Climate Change Indicators: Heat-Related Illnesses*, U.S. Env't Prot. Agency, *supra* note 62.

⁷¹ *Id.*

⁷² *Id.*

⁷³ *Heat Stress—Heat Related Illness*, Nat'l Inst. for Occupational Safety & Health, *supra* note 62; Dep't of the Navy, NAVMED P-5010-3, Manual of Naval Preventive Medicine: Prevention of Heat and Cold Stress Injuries (Ashore, Afloat, and Ground Forces) at 3–8 (2009), <https://www.med.navy.mil/Portals/62/Documents/BUMED/Directives/All%20Pubs/5010-3.pdf?ver=yohnSL5ixr0E8pzXCJLhCw%3D%3D>.

⁷⁴ *Id.*

⁷⁵ *Id.*

⁷⁶ *Heat Stress—Heat Related Illness*, Nat'l Inst. for Occupational Safety & Health, *supra* note 62.

age.⁷⁷ Researchers have linked a CKDnt epidemic among farmworkers in Central America with chronic occupational heat stress.⁷⁸ It is estimated that CKDnt has caused up to 20,000 premature deaths in Central America, affecting primarily young male agricultural workers.⁷⁹

Acute kidney injuries resulting from heat strain and dehydration have also been documented in agricultural workers in the United States, including in California⁸⁰ and Florida, where researchers identified a “strikingly high prevalence of dehydration” and kidney injuries.⁸¹ During the summers of 2015 and 2016, researchers collected blood and urine samples from 192 Florida agricultural workers over 555 workdays, and found that approximately 53% of the workers were dehydrated pre-shift and 81% post-shift.⁸² On at least one workday, 33% of workers had an acute kidney injury, and the odds of an acute kidney injury increased 47% for each 5°F increase in the heat index.⁸³

Because exposure to extreme heat can cause a range of acute and chronic heat-related illnesses, occupational heat exposure is a grave danger to the health and safety of outdoor and indoor workers, and it demands mitigation through an emergency temporary standard.

C. Millions of Vulnerable Workers Face Grave Health Risks from Outdoor and Indoor Occupational Heat Exposure.

Tens of millions of workers across the country work in industries and occupations that put them at grave danger of injury, illness, or death from heat

⁷⁷ Farmworker Justice & The Migrant Clinicians Network, Heat-Related Illness Clinician’s Guide 2 (2021), https://www.farmworkerjustice.org/wp-content/uploads/2021/06/2021_Heat-Stress_Clinicians-Guide_Aug-2021.pdf.

⁷⁸ Catharine Wesseling et al., *Chronic Kidney Disease of Non-Traditional Origin in Mesoamerica: A Disease Primarily Driven by Occupational Heat Stress*, 44 Pan Am. J. Pub. Health (2020).

⁷⁹ *Id.*; see also Oriana Ramírez-Rubio et al., *Urine Biomarkers of Kidney Injury Among Adolescents in Nicaragua, a Region Affected by an Epidemic of Chronic Kidney Disease of Unknown Aetiology*, 31 Nephrology Dialysis Transplantation 424 (2016); *CKDnT: A Fatal Epidemic*, La Isla Network, <https://laislanetwork.org/about-ckdu/> (last visited Jan. 31, 2023).

⁸⁰ Sally Moyce et al., *Heat Strain, Volume Depletion and Kidney Function in California Agricultural Workers*, 74 J. Occupational & Env’t Med. 402 (2017).

⁸¹ Jacqueline Mix et al., *Hydration Status, Kidney Function, and Kidney Injury in Florida Agricultural Workers*, 60 J. Occupational & Env’t Med. 253 (2018).

⁸² *Id.*

⁸³ *Id.*

exposure and its secondary effects.⁸⁴ Nationally, the total number of workers employed in occupations vulnerable to extreme heat in 2022 was approximately 52.2 million.⁸⁵ Of these workers, around 24.6 million, or 47%, were people of color.⁸⁶

Table 1. Percent of U.S. workers in occupations vulnerable to extreme heat by sex, race, and ethnicity in 2022.⁸⁷

Occupation	Total employed (in thousands)	2022				
		Women	White	Black or African American	Asian	Hispanic or Latino
Total, ages 16 years and over	158,291	46.8%	77.0%	12.6%	6.7%	18.5%
Total, ages 16 years and over in occupations vulnerable to extreme heat ⁸⁹	52,157	25.9%	77.1%	14.4%	4.1%	28.6%

As the climate crisis worsens, occupational exposure to extreme heat is expected to surge. One study predicts that with slow or no action to reduce global

⁸⁴ In Massachusetts, for example, there were 368 emergency department visits associated with occupational heat-related injury or illness between 2016 and 2019. Mass. Dep't of Pub. Health Occupational Health Surveillance Program, Occupational Health Indicator 24: Occupational Heat-Related Emergency Department Visits, 2016-2019 (2022), <https://www.cste.org/page/OHIndicators>.

⁸⁵ See *infra* Tbl.1.

⁸⁶ *Id.*

⁸⁷ *Labor Force Statistics from the Current Population Survey*, U.S. Bureau of Labor Statistics, <https://www.bls.gov/cps/cpsaat11.htm> (last updated Jan. 25, 2023).

⁸⁸ "Estimates for the above race groups (White, Black or African American, and Asian) do not sum to totals because data are not presented for all races. Persons whose ethnicity is identified as Hispanic or Latino may be of any race." *Id.*

⁸⁹ Based on findings reported in Licker, Dahl, and Abatzoglou (2021) and Park, Pankrantz, and Behrer (2021), the following categories were defined as occupations vulnerable to extreme heat: protective service occupations; food preparation and serving related occupations; building and grounds cleaning and maintenance occupations; couriers and messengers; postal service mail carriers; postal service mail sorters, processors, and processing machine operators; natural resources, construction, and maintenance occupations; and production, transportation, and material moving occupations. See Rachel Licker, Kristina Dahl & John T. Abatzoglou, *Quantifying the Impact of Future Extreme Heat on the Outdoor Work Sector in the United States*, 10 *Elementa: Sci. of the Anthropocene* 48 (2022); R. Jisung Park, Nora Pankratz & A. Patrick Behrer, *Temperature, Workplace Safety, and Labor Market Inequality* (Ctr. for Equitable Growth, Working Paper, July 14, 2021).

greenhouse gas emissions, outdoor workers' exposure to days with a heat index above 100°F will increase threefold or fourfold by 2050.⁹⁰ Indoor workers will be affected too, as extreme heat is shown to strain cooling systems and worsen the effects of radiant sources of heat in the workplace, such as stoves and furnaces.⁹¹

While extreme heat is a grave danger to an array of outdoor and indoor workers, certain workers, including farmworkers, construction workers, postal and delivery workers, warehouse workers, and food service workers, are at an elevated risk for heat-related injury, illness, and death in the workplace.

1. Farmworkers

The nation's 2.4 million farmworkers—who are tasked with handling livestock and planting, maintaining, harvesting, and packing fruits and vegetables—are at the highest risk of heat-related illness and death.⁹² Indeed, farmworkers die of heat-related causes at 20 times the rate of the rest of the U.S. civilian workforce.⁹³ Since 2005, the first year California began tracking the number of heat-related fatalities, 36% of California's heat-related worker deaths have been of farmworkers.⁹⁴ This high risk is attributable to, among other things, the grueling and physically-demanding nature of their work, as farmworkers generally labor in the direct sun during the hottest months of the year.⁹⁵ In addition, farmworkers tend to wear long-sleeved clothing and layers to protect against pesticides, insects, and the sun. Workers in protective gear can begin to experience heat illness at

⁹⁰ Union of Concerned Scis., *Too Hot to Work 2–3* (2021), https://www.ucsusa.org/sites/default/files/2021-09/Too-Hot-to-Work_9-7.pdf.

⁹¹ See, e.g., Pub. Citizen, *Boiling Point 26* (2022) (citing OSHA, *Overview: Working in Outdoor and Indoor Heat Environments*, <https://www.osha.gov/heat-exposure> (last visited Jan. 31, 2023)).

⁹² See U.S. Dep't of Agric., Nat'l Agric. Stats Serv., 2017 Census of Agriculture tbl. 71 (2019), https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1_Chapter_1_US/usv1.pdf; Diane M. Gubernot et al., *The Epidemiology of Occupational Heat Exposure in the United States: A Review of the Literature and Assessment of Research Needs in a Changing Climate*, 58 *Int'l J. Biometeorology* 1779, 1780 (2014); Diane M. Gubernot et al., *Characterizing Occupational Heat-Related Mortality in the United States, 2000–2010: An Analysis Using the Census of Fatal Occupational Injuries Database*, 58 *Am. J. Indus. Med.* 203 (2015).

⁹³ See Union of Concerned Scis., *Farmworkers at Risk 4* (2019), <https://www.ucsusa.org/sites/default/files/2019-12/farmworkers-at-risk-report-2019-web.pdf> (citing *Heat-Related Deaths Among Crop Workers—United States, 1992–2006*, Ctrs. for Disease Control & Prevention, <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm5724a1.htm> (last updated June 19, 2008)).

⁹⁴ Teniope Adewumi-Gunn & Juanita Constible, Nat. Res. Def. Council, *Feeling the Heat: How California's Workplace Heat Standards Can Inform Stronger Protections Nationwide* (2022), <https://www.nrdc.org/sites/default/files/feeling-heat-ca-workplace-heat-standards-report.pdf>.

⁹⁵ See Union of Concerned Scis., *Farmworkers at Risk*, *supra* note 93, at 4–5.

temperatures 12°F to 27°F below temperatures at which workers in lighter clothing begin to experience such effects.⁹⁶

Socioeconomic vulnerability may also exacerbate farmworkers' susceptibility to heat injury. Because farmworkers are often paid at a piece rate rather than by the hour, they may be disincentivized from taking time to get water or rest.⁹⁷ Additionally, around half of farmworkers are undocumented—though some growers and labor contractors estimate that the share is closer to 75%—and fear of retaliation through immigration enforcement may prevent them from demanding safer working conditions.⁹⁸ Further, compared to workers in other industries, farmworkers are much more likely to be native Spanish-speakers or foreign-born, which can limit the accessibility of written training materials or guidance and create language or cultural barriers with supervisors.⁹⁹

In addition, because farmworkers tend to be paid low wages, they may lack resources such as air-conditioning and clean water to cool off and recover after work.¹⁰⁰ While some employers are required to provide housing for temporary migrant farmworkers,¹⁰¹ such housing often lacks fans or air-conditioning, preventing much-needed overnight recovery time from the heat.¹⁰² Thus,

⁹⁶ *Id.*

⁹⁷ *Id.*; see also Vicki Hertzberg et al., *Novel Analytic Methods Needed for Real-Time Continuous Core Body Temperature Data*, 39 West J. Nurs. Res. 95 (2017) (concluding that four out of five farm workers studied had body temperatures higher than the healthy limit of 100.4°F at least once during a three-day monitoring period; and that about 85% of workers claimed to experience heat-related symptoms, such as dizziness, nausea, headaches, confusion, or fainting, because much of their work occurs in hot environments and workers are under pressure to meet certain production quotas, requiring rapid work and limited breaks).

⁹⁸ See Raquel Rosenbloom, *A Profile of Undocumented Agricultural Workers in the United States*, Ctr. for Migration Studies (Aug. 30, 2022), <https://cmsny.org/agricultural-workers-rosenbloom-083022/>; Miriam Jordan, *Farmworkers, Mostly Undocumented, Become 'Essential' During Pandemic*, N.Y. Times (Apr. 10, 2020), <https://www.nytimes.com/2020/04/02/us/coronavirus-undocumented-immigrant-farmworkers-agriculture.html>; Julia Shipley et al., *Heat Is Killing Workers in the U.S.—And There Are No Federal Rules to Protect Them*, NPR (Aug. 17, 2021), <https://www.npr.org/2021/08/17/1026154042/hundreds-of-workers-have-died-from-heat-in-the-last-decade-and-its-getting-worse>; Ingfei Chen, *How Heat Kills Farmworkers*, Mother Jones (Sept. 20, 2017), <https://www.motherjones.com/food/2017/09/farmworkers-hot-days-deadly-mendota-california/>.

⁹⁹ See Vt. L. School, Ctr. for Agric. & Food Systems, *Essentially Unprotected* 6, 32, 42 (2021).

¹⁰⁰ See Union of Concerned Scis., *Farmworkers at Risk*, *supra* note 93, at 5.

¹⁰¹ See *H-2A Seasonal Worker Program Has Expanded Over Time*, Econ. Res. Service, U.S. Dep't of Agric., <https://www.ers.usda.gov/data-products/chart-gallery/gallery/chart-detail/?chartId=104874> (last updated Oct. 3, 2022).

¹⁰² See Union of Concerned Scis., *Farmworkers at Risk*, *supra* note 93, at 5; see also 29 C.F.R. §§ 654.404 & 1910.142 (federal housing standards that do not require cooling mechanisms).

farmworkers often start their workday already experiencing some form of heat stress.¹⁰³

Farmworkers are also exempt from key federal labor protections afforded to other industries. For instance, farmworkers are not covered by the National Labor Relations Act, and most states do not protect farmworkers' right to collectively organize or form unions.¹⁰⁴ Thus, less than one percent of farmworkers across the country are in a union, limiting their ability to advocate for better working conditions.¹⁰⁵ Moreover, the majority of farmworkers do not have health insurance or workers' compensation and are unlikely to seek medical treatment for injuries.¹⁰⁶

2. Construction Workers

Construction workers face a range of occupational hazards, including exposure to extreme heat.¹⁰⁷ While construction workers comprise only 6% of the national workforce, they account for 36% of heat-related deaths.¹⁰⁸ Indeed, millions of construction workers labor in extreme heat each year. For instance, during the month of July 2017, an average of 851,000 workers in the construction industry labored in extreme heat each day.¹⁰⁹ On July 21, 2017, 2.2 million construction workers across the country went to work in extreme heat, accounting for 30% of workers in the industry.¹¹⁰

The number of heat-related deaths among construction workers has steadily increased over time, and that trend is expected to continue.¹¹¹ By the middle of the 21st century, most parts of Florida and Texas—the states with the largest populations of construction workers—will experience an additional month's worth of days where the heat and humidity combine to feel hotter than 90°F.¹¹² At the same

¹⁰³ *Id.*

¹⁰⁴ Johns Hopkins Ctr. for a Livable Future, *Essential and in Crisis: A Review of the Public Health Threats Facing Farmworkers in the US* 13 (2021).

¹⁰⁵ Gosia Wozniacka, *Less Than 1 Percent of US Farmworkers Belong to a Union. Here's Why*, *Civil Eats* (May 7, 2019), <https://civileats.com/2019/05/07/less-than-1-percent-of-us-farmworkers-belong-to-a-union-heres-why/>.

¹⁰⁶ See Union of Concerned Scis., *Farmworkers at Risk*, *supra* note 93, at 5.

¹⁰⁷ Scott Earnest et al., *50 Years of NIOSH Construction Safety and Health Research*, NIOSH Sci. Blog (Aug. 16, 2021), <https://blogs.cdc.gov/niosh-science-blog/2021/08/16/construction-50th/>.

¹⁰⁸ Xiuwen Sue Don et al., *Heat-Related Deaths Among Construction Workers in the United States*, 62 *Am. J. Indus. Med.* 1047–57 (2019).

¹⁰⁹ Pub. Citizen, *Extreme Heat and Unprotected Workers* 10 (2018), https://www.citizen.org/wp-content/uploads/extreme_heat_and_unprotected_workers.pdf.

¹¹⁰ *Id.*

¹¹¹ *Id.*

¹¹² See Union of Concerned Scis., *Too Hot to Work*, *supra* note 90.

time, the number of workers employed in the construction sector is rising. In 2019, the U.S. construction sector employed approximately 11.4 million workers, and that number has risen each year from a decline during the 2007–2008 economic recession.¹¹³

Several factors contribute to high rates of heat-related illness and death for construction workers. Construction work, by its nature, is physically intensive, and physical stress raises body temperature, making workers more susceptible to heat illness.¹¹⁴ Similarly, construction workers often wear personal protective equipment, such as hard hats, gloves, and long-sleeved clothing, which can reduce the ability of the body to cool itself off.¹¹⁵ Construction workers also tend to work outdoors directly exposed to heat and sunlight, or in poorly ventilated, closed spaces, where they may be exposed to heat-producing equipment.¹¹⁶

3. Postal and Delivery Service Workers

Postal and delivery workers are regularly exposed to environmental heat stress while making deliveries, driving vehicles, and sorting mail and parcels. As the delivery sector grows alongside online retail and on-demand delivery services, more and more workers will face dangerously hot conditions.

In recent years, United Parcel Service (UPS), the largest private parcel delivery company in the United States, has faced scrutiny over occupational heat exposure.¹¹⁷ Most UPS delivery trucks do not have air-conditioning, and on hot days, the temperature in the cargo area of trucks can reach 140°F or higher.¹¹⁸ An NBC News analysis of heat-related hospitalizations of UPS workers found that at least 107 workers had been hospitalized from 2015 to 2019, which translates to one in every 1,000 workers during that four-year period.¹¹⁹ In July 2022, after at least six package delivery drivers in the New York City metropolitan area experienced

¹¹³ Earnest et al., *supra* note 107.

¹¹⁴ Katie Pyzyk, *As OSHA Works on New Heat-Related Standard, Contractors Deal with Excessively Hot Weather*, Construction Dive (July 18, 2022), <https://www.constructiondive.com/news/osha-develop-federal-heat-exposure-standard-construction-health-risk/627505/> (citing Don et al., *supra* note 108).

¹¹⁵ *Id.*

¹¹⁶ *Id.*

¹¹⁷ *See, e.g.*, Claudia Irizarry Aponte & Samantha Maldonado, *UPS Drivers Demand AC in Trucks Following Heat Wave: “It’s Like Walking Into Hell,”* The City (July 27, 2022), <https://www.thecity.nyc/work/2022/7/27/23281777/ups-drivers-trucks-heat-wave-hell>.

¹¹⁸ Lisa Riordan Seville et al., *In the Hot Seat: UPS Delivery Drivers at Risk of Heat-Related Illnesses*, NBC News (July 18, 2019), <https://www.nbcnews.com/business/economy/hot-seat-ups-delivery-drivers-are-risk-heat-stroke-kidney-n1031321>.

¹¹⁹ *Id.*

heat-related illnesses during a mid-summer heat wave, UPS workers protested outside the company's warehouse in Canarsie, Brooklyn, calling for air-conditioned trucks.¹²⁰

Public-sector delivery workers are at risk, too. From 2012 to 2019, OSHA issued citations to the U.S. Postal Service for exposing at least 900 employees across the country to dangerously hot temperatures during their shifts.¹²¹ According to OSHA inspection records, the postal workers experienced extreme muscle cramps, vomiting, loss of consciousness, and heatstroke, among other conditions.¹²² Over the same years, at least five mail carriers died from heatstroke, heat exhaustion, hyperthermia, or heart failure, with heat exposure as an underlying factor.¹²³

Couriers, including on-demand and app-based delivery workers, also face significant dangers from heat exposure.¹²⁴ For instance, a 2019 survey of food delivery workers and courier cyclists found that such workers are particularly susceptible to heat stress because they are often unable to reschedule or rearrange different work tasks during the workday; take hydration or rest breaks; vary the pace of their work; alter routes; or refuse work, as many fear that they will be deprioritized in the bidding process for future work.¹²⁵

¹²⁰ *Id.*; see also Aponte & Maldonado, *supra* note 117.

¹²¹ Maryam Jameel, *Extreme Heat Doesn't Stop the Mail—Even at the Cost of Postal Workers' Health*, Pub. Integrity (Aug. 6, 2019), <https://publicintegrity.org/inequality-poverty-opportunity/workers-rights/worker-health-and-safety/extreme-heat-post-worker-health/>. As explained below, however, without quantifiable heat standards, OSHA faces substantial legal hurdles in proving the existence of a heat hazard in enforcement cases. See *infra* Section II.C.

¹²² *Id.*

¹²³ *Id.* As one example, in July 2013, a U.S. Postal Service employee in Medford, Massachusetts collapsed after walking his delivery route for about five hours on a day with a heat index above 100°F. He died the following day due to heat stroke. See News Release, Occupational Safety & Health Admin., US Postal Service Cited by US Labor Department's OSHA After Heat-related Death of Medford, Mass., Mail Carrier in July Heat Wave (Dec. 16, 2013), <https://www.osha.gov/news/newsreleases/region1/12162013-0>.

¹²⁴ See Maria Figueroa et al., *Los Deliveristas Unidos, Essential but Unprotected: App-based Food Couriers in New York City* (2021), <https://img1.wsimg.com/blobby/go/6c0bc951-f473-4720-be3e-797bd8c26b8e/09142021CHARTSLos%20Deliveristas%20Unidos-v02.pdf>.

¹²⁵ See James Goodman et al., *Climate Just. Rsch. Ctr., Uni. of Tech., Sydney, Heat Stress and On-Demand Work: The Experience of Food Delivery and Courier Cyclists* (2019), <https://opus.lib.uts.edu.au/bitstream/10453/134736/1/On%20Demand%20cyclists%20UTS%20final.pdf>.

4. Warehouse Workers

The warehouse and storage industry has grown dramatically over the past decade, largely due to the rise in online retail.¹²⁶ In December 2022, over 1.75 million workers were employed in the industry.¹²⁷ Just one decade earlier, in December 2011, 668,900 people were employed in the industry.¹²⁸

Because warehouses and storage facilities are often uninsulated buildings that lack air-conditioning, they are dangerous places to work during extreme heat events.¹²⁹ During a June 2021 heat wave in Oregon, at least 80 people died from heat-related illnesses, including a middle-aged trainee at a Walmart distribution center who collapsed at the end of his shift after stumbling and having difficulty speaking.¹³⁰ Amazon workers have also drawn attention to dangerous heat conditions in the company's warehouses. This past summer, workers at a San Bernardino, California Amazon facility went on strike, calling for, among other things, the abatement of indoor heat hazards.¹³¹ Across Southern California, warehouse workers have reported dangerously hot work environments that lack both air-conditioning and convenient access to water.¹³² For instance, Rite Aid warehouse workers interviewed by the Los Angeles Times said there is only one work area in their facility that is air-conditioned—a “chocolate room,” where employees sort bags of chocolate candy before sending them to drugstores for sale.¹³³

¹²⁶ See Max Garland, *Warehouse Employment Hits New Record After Monthslong Dip*, Supply Chain Dive (Aug. 17, 2021), <https://www.supplychaindive.com/news/warehouse-employment-robotics-labor-automation-jobs/604920/>.

¹²⁷ *Warehousing and Storage: NAICS 493*, U.S. Bureau of Labor Statistics, <https://www.bls.gov/iag/tgs/iag493.htm> (last updated Jan. 25, 2023).

¹²⁸ See Garland, *supra* note 126.

¹²⁹ See Anna M. Phillips, *How Hot Is It Inside Southern California's Warehouses? Ask the Workers at Rite Aid*, L.A. Times (Oct. 12, 2021), <https://www.latimes.com/environment/story/2021-10-12/heat-risk-rite-aid-workers-southern-california-warehouse>.

¹³⁰ Ariel Wittenberg & Zach Colman, *Why OSHA Won't Protect Workers from Climate Change*, E&E News (Aug. 6, 2021), <https://www.eenews.net/articles/why-osh-wont-protect-workers-from-climate-change/>.

¹³¹ Gregory Yee, *Why Amazon Warehouse Workers Walked Off the Job in San Bernardino*, L.A. Times (Aug. 15, 2022), <https://www.latimes.com/california/story/2022-08-15/amazon-warehouse-workers-walkout-san-bernardino-air-hub>; Suhauna Hussain, *Amazon Workers in San Bernardino Allege Anti-Union Actions and Retaliation*, L.A. Times (Oct. 15, 2022), <https://www.latimes.com/business/story/2022-10-15/amazon-workers-at-san-bernardino-air-freight-facility-protest-alleged-retaliation>.

¹³² Phillips, *supra* note 129.

¹³³ *Id.*

Working in hot indoor environments also increases the risk of other types of workplace injuries, such as falls and the mishandling of dangerous machinery.¹³⁴ According to researchers from the University of California, Los Angeles and Stanford University, such injuries may be the result of heat's ability to impair decision-making and cognitive function.¹³⁵ Their research found that in the manufacturing and distribution industries, on days when the temperature ranged from 95°F to 100°F, injuries increased by about 10% compared to days when the temperature ranged from 60°F to 65°F.¹³⁶

Despite these risks, companies continue to build warehouses, largely without air-conditioning, in hot climates. Since 2010, more than 400 new warehouses have been built in California's Inland Empire, a region where temperatures regularly soar above 100°F during the summer months.¹³⁷ New warehouses are also springing up in cities along the edge of the Mojave Desert in San Bernardino County.¹³⁸

5. Food Service Workers

Nearly 11 million workers in the food service industry may be exposed to excessive heat both from kitchen equipment and high ambient temperatures.¹³⁹ Indeed, working in hot kitchens with hot equipment—including stoves, dishwashers, pans, pots, and plates—significantly increases restaurant workers' susceptibility to heat illness.¹⁴⁰ A 2020 study that examined heat stress and air quality in New York City public school kitchens found that kitchen workers are exposed to “excessive indoor heat levels,” and their risk of heat-related illness or acute injury varies based on their work rate and degree of heat acclimatization.¹⁴¹ Heat in restaurant kitchens can also impair workers' concentration and cognitive

¹³⁴ See Anna M. Phillips, *Study: Hotter Temps Increased Workplace Injuries in California; Incidents Undercounted*, L.A. Times (July 16, 2021), <https://www.latimes.com/environment/story/2021-07-16/study-finds-hotter-temperatures-increased-workplace-injuries-in-california>.

¹³⁵ *Id.*; R. Jisung Park et al., IZA Inst. of Lab. Econ., *Temperature, Workplace Safety, and Labor Market Inequality* 19 (2021), <https://ftp.iza.org/dp14560.pdf>.

¹³⁶ *Id.*

¹³⁷ Phillips, *supra* note 129.

¹³⁸ *Id.*

¹³⁹ *Food Services and Drinking Places: NAICS 722*, U.S. Bureau of Labor Statistics, <https://www.bls.gov/iag/tgs/iag722.htm> (last updated Jan. 25, 2023).

¹⁴⁰ Peter Romeo, *Workplace Regulators Eye New Safeguards Against Excessive Heat*, Restaurant Bus. (Apr. 29, 2022), <https://www.restaurantbusinessonline.com/operations/workplace-regulators-eye-new-safeguards-against-excessive-heat>.

¹⁴¹ A. Michael Ierardi & Brian Pavidonis, *Heat Stress Risk Among New York City Public School Kitchen Workers: A Quantitative Exposure Assessment*, 17 J. Occupational & Env't Hygiene 353 (2020).

ability, causing accidents such as cuts and burns, and potentially threatening the quality and safety of food served to customers.¹⁴²

Although temperatures in restaurant kitchens can be dangerously high at any time of the year, kitchen work is especially dangerous during the summer months, as extreme heat can strain air-conditioning and ventilation systems. For instance, in June 2021, workers at a doughnut shop in Portland, Oregon went on strike after temperatures reached 100°F within the establishment, citing the imminent danger of heat stroke, especially when working over a fryer.¹⁴³ During a heat wave in August 2021, restaurants across the Northeast, including in Massachusetts and Vermont, closed temporarily because of the heat.¹⁴⁴ In 2022, the owner of a 90-year-old steakhouse in Austin, Texas decided to close the restaurant for June, July, and August because “it just gets too hot standing over a 450 degree grill,” even with air-conditioning.¹⁴⁵

While workers in agriculture, construction, postal and delivery services, warehousing, and food services are particularly vulnerable to occupational heat stress, they are not the only U.S. workers exposed to extreme heat in the workplace. Accordingly, OSHA should issue an emergency temporary standard for occupational heat exposure that covers all outdoor and indoor workers for summer 2023.

D. Occupational Heat Exposure Is an Issue of Environmental and Racial Justice.

As President Biden has recognized, millions of U.S. workers are exposed to heat in the workplace, but the nation’s “essential jobs with high [heat] exposure levels are disproportionately held by Black and Brown workers,” making

¹⁴² *The Risk of Heat Stress in Restaurant Kitchens*, Province of Ont. Workplace Safety & Prevention Servs., <https://www.wsps.ca/resource-hub/articles/the-risk-of-heat-stress-in-restaurant-kitchens> (last visited Jan. 31, 2023).

¹⁴³ Matthew Sedacca, *Food-Service Workers Are Suffering from Extreme Heat. Few Rules Exist to Protect Them*, *The Counter* (Sept. 6, 2021), <https://thecounter.org/food-service-workers-suffer-extreme-heat-high-temperatures/>.

¹⁴⁴ Leticia Miranda, *Heat Waves Aren’t Just Scorching People, They Are Incinerating Local Businesses*, *NBC News* (Aug. 13, 2021), <https://www.nbcnews.com/business/business-news/heat-waves-aren-t-just-scorching-people-they-are-incinerating-n1276763>.

¹⁴⁵ Chris O’Connell, *Austin’s Beloved 90-Year-Old Steak Joint Hoffbrau Closes for the Summer Amid Texas Heatwave*, *MYSA* (June 28, 2022), <https://www.mysanantonio.com/food/article/Texas-heatwaves-closes-Hoffbrau-austin-steakhouse-17271097.php>; Tim Carman, *As Temperatures Rise, Chefs Find They Can’t Stand the Heat Anymore*, *Wash. Post* (Aug. 1, 2022), <https://www.washingtonpost.com/food/2022/08/01/heat-restaurant-workers-osha/>.

occupational heat exposure an issue of environmental and racial justice.¹⁴⁶ Indeed, it is well-documented that heat stress disproportionately burdens workers of color and low-wage workers, largely because they are overrepresented in occupations most vulnerable to heat, including labor-intensive outdoor occupations.¹⁴⁷

Workers who identify as Hispanic or Latino have accounted for one-third of all heat-related fatalities since 2010, even though they represent only 18% of the national workforce.¹⁴⁸ This disparity is attributable to the fact that around 75% of farmworkers¹⁴⁹ and 40% of construction workers nationwide identify as Hispanic or Latino.¹⁵⁰ Likewise, more than 48% of laborers and freight, stock, and materials movers are Black or Hispanic.¹⁵¹ In the delivery sector, 22.4% of postal service mail carriers and 21.6% of couriers are Black, even though Black Americans make up just 12.6% of the total workforce.¹⁵²

In addition, immigrants and seasonal workers disproportionately suffer from occupational heat illness, in part, because the nation's food system relies heavily on their labor.¹⁵³ Over half of farmworkers across the country are either undocumented or migrant workers,¹⁵⁴ and approximately three-quarters were born outside the United States, mainly in Mexico.¹⁵⁵

Climate change will only exacerbate the racial disparities associated with occupational heat exposure. The Union of Concerned Scientists projects that by mid-century, the hardest-hit counties in terms of days above 100°F and the highest

¹⁴⁶ Press Release, The White House, Fact Sheet: Biden Administration Mobilizes to Protect Workers and Communities from Extreme Heat (Sept. 20, 2021), https://www.whitehouse.gov/briefing-room/statements-releases/2021/09/20/fact-sheet-biden-administration-mobilizes-to-protect-workers-and-communities-from-extreme-heat/?utm_source=link;

¹⁴⁷ See, e.g., Pub. Citizen, *Boiling Point*, *supra* note 91; Union of Concerned Scis., *Too Hot to Work*, *supra* note 90, at 3; Ariel Wittenberg, *OSHA Targets Heat Threats Heightened by Climate Change*, E&E News: Greenwire (Oct. 26, 2021), <https://www.eenews.net/articles/osha-targets-heat-threats-heightened-by-climate-change/>.

¹⁴⁸ See Wittenberg, *supra* note 147.

¹⁴⁹ JBS Int'l & U.S. Dep't of Lab., *Findings from the National Agricultural Workers Survey (NAWS) 2019–2020*, Research Report No. 16 (2022).

¹⁵⁰ *Labor Force Statistics from the Current Population Survey*, U.S. Bureau of Labor Statistics, <https://www.bls.gov/cps/cpsaat11.htm> (last updated Jan. 25, 2023).

¹⁵¹ *Id.*

¹⁵² *Id.*

¹⁵³ Union of Concerned Scis., *Farmworkers at Risk*, *supra* note 93, at 2.

¹⁵⁴ Daniel Costa, Philip Martin & Zachariah Rutledge, *Econ. Pol'y Inst., Federal Labor Standards Enforcement in Agriculture* (2020).

¹⁵⁵ Union of Concerned Scis., *Farmworkers at Risk*, *supra* note 93, at 2; JBS Int'l & U.S. Dep't of Lab., *supra* note 149.

proportion of outdoor workers will include Hendry County, Florida and Kennedy County, Texas, places where a majority of the residents identify as Hispanic or Latino.¹⁵⁶ In parts of California, where over 90% of farmworkers identify as Hispanic or Latino, there will be approximately 17 more days per year with a heat index above 100°F by 2050.¹⁵⁷

Workers who are paid low wages are also disproportionately vulnerable to extreme heat in the workplace, as they tend to work in more physically-grueling and dangerous jobs.¹⁵⁸ In addition, low-wage workers are more likely to live in areas affected by the urban heat island effect or have trouble paying high energy bills associated with air-conditioning, limiting their ability to cool down at home.¹⁵⁹

Because workers of color and low-wage workers are disproportionately exposed to dangerous levels of heat in the workplace, occupational heat exposure is an issue of environmental and racial justice. To abate the grave danger of extreme heat—and to mitigate these inequities—OSHA should promulgate an emergency temporary standard for occupational heat exposure for summer 2023.

E. Known Workplace Injuries, Illnesses, and Deaths from Heat Exposure Are Prevalent and Likely Significantly Undercounted.

While the number of reported occupational injuries, illnesses, and deaths attributable to heat exposure is already high, that number is likely significantly undercounted.¹⁶⁰ Officially, the Bureau of Labor Statistics cites heat as a contributing cause of death for at least 43 workplace fatalities in 2021 and 56 in 2020.¹⁶¹ Between 1992 and 2017, occupational heat exposure killed at least 815 workers, and seriously injured 70,000 or more.¹⁶² However, as OSHA has acknowledged, the actual number of workplace injuries, illnesses, and fatalities likely is much higher because of underreporting by employers and employees

¹⁵⁶ Union of Concerned Scis., *Too Hot to Work*, *supra* note 90, at 3.

¹⁵⁷ *Id.*

¹⁵⁸ See Phillips, *supra* note 134.

¹⁵⁹ *Id.*; *Heat Islands and Equity*, U.S. Env't Prot. Agency, *supra* note 44.

¹⁶⁰ 86 Fed. Reg. at 59,310 (OSHA recognizing that injuries, illnesses, and deaths from occupational heat exposure are significantly undercounted).

¹⁶¹ See *Fatal Occupational Injuries by Event or Exposure, 2021*, U.S. Bureau of Lab. Stat., <https://www.bls.gov/charts/census-of-fatal-occupational-injuries/fatal-occupational-injuries-by-event-drilldown.htm> (last visited Jan. 30, 2023); *43 Work-Related Deaths Due to Environmental Heat Exposure in 2019*, TED: The Econ. Daily (Sept. 1, 2021), <https://www.bls.gov/opub/ted/2021/43-work-related-deaths-due-to-environmental-heat-exposure-in-2019.htm>.

¹⁶² See Wittenberg & Colman, *supra* note 130

alike.¹⁶³ This underreporting results from, among other things, the difficulty in recognizing heat as a contributing factor to injury, illness, and death; existing reporting requirements, which do not require reporting if the injury or illness does not result in medical treatment or days away from work; and disincentives for employees and employers alike, including fear of lost wages, retaliation, and reputational harm.¹⁶⁴ These disincentives are particularly acute for undocumented, migrant, or low-wage workers, who are often at the greatest risk of heat-related illness.¹⁶⁵

Recent analysis of more than 11 million workers' compensation injury reports in California from 2001 through 2018 found that high temperatures likely caused approximately 20,000 additional injuries and illnesses per year in that state alone.¹⁶⁶ That number is approximately 300 times the official tally of annual injuries and illnesses attributed to heat by the California Division of Occupational Safety and Health (Cal/OSHA).¹⁶⁷ Researchers explain this discrepancy on heat's impacts on cognition and concentration, which, when experienced in hazardous work environments like construction sites or warehouses, can markedly increase workplace accidents.¹⁶⁸

Based on the foregoing, it is undeniable that extreme heat poses a grave danger to the health and safety of workers in our states and across the country. As explained below, an emergency temporary standard is necessary to protect outdoor and indoor workers from this danger during the hottest months of the year.

II. An Emergency Temporary Standard Is Necessary to Protect Outdoor and Indoor Workers from the Grave Danger of Extreme Heat.

Extreme heat is a grave danger to the health and safety of millions of outdoor and indoor workers across the country, yet nearly all heat-related injuries, illnesses, and deaths are preventable through protective measures and intervention when signs of heat illness are first identified. For several reasons, OSHA should address this threat by promulgating an emergency temporary standard under Section 6(c) of the Occupational Safety and Health Act that requires the prevention and mitigation of workplace heat hazards.

¹⁶³ See 86 Fed. Reg. at 59,310–11.

¹⁶⁴ *Id.*

¹⁶⁵ *Id.* at 59,311.

¹⁶⁶ Park, Pankratz & Behrer, *supra* note 89.

¹⁶⁷ *Id.*

¹⁶⁸ *Id.*

First, in many states, OSHA is the only entity authorized to issue occupational safety standards, meaning that workers in those states will lack protection from heat exposure until OSHA acts. Second, three states with authority to promulgate their own standards have already found the need to issue emergency temporary standards, and ultimately permanent standards, for occupational heat exposure. These state precedents recognize that extreme heat is a grave danger to the health and safety of workers, and they can serve as valuable templates for OSHA in establishing its own standard.

Third, largely because OSHA has not promulgated a permanent standard for occupational heat exposure, enforcement of heat hazards under the General Duty Clause of the Occupational Safety and Health Act is almost always unsuccessful. An emergency temporary standard, however, has the same legal effect as a permanent standard in an OSHA enforcement proceeding. In addition, even if OSHA does not renew or extend the emergency temporary standard past the six-month deadline contemplated by the Occupational Safety and Health Act, the emergency standard can serve as an identifiable standard in future OSHA enforcement proceedings and as guidance for employers on how to maintain a safe workplace. Thus, an emergency temporary standard can protect workers from occupational heat exposure even while OSHA continues its proposed rulemaking for a permanent standard.

A. OSHA Has Exclusive Authority to Promulgate Worker Safety Standards in Many States.

In many states and territories, OSHA is the only government entity authorized to promulgate health and safety standards for workers.¹⁶⁹ Just 22 states and territories have OSHA-approved state plans (which are state occupational safety and health programs that must be at least as protective as the federal OSHA standards) that cover both public and private sector workers. Six states—Connecticut, Illinois, Maine, Massachusetts, New Jersey, and New York—and the U.S. Virgin Islands have state plans that cover public workers only, meaning that state and local agencies cannot impose a standard or investigate or enforce a complaint relating to private sector workers. The remaining states and territories, including Pennsylvania, are federally preempted from passing any standards to protect workers from extreme heat.

¹⁶⁹ See *State Plans*, Occupational Safety & Health Admin., <https://www.osha.gov/stateplans/> (last visited January 31, 2023).

Currently, five states—California, Oregon, Washington, Minnesota, and Colorado—have implemented some form of protective heat standards for workers.¹⁷⁰ In addition, Maryland and Nevada have passed laws requiring state health and safety administrators to promulgate rules related to hazardous heat in the workplace.¹⁷¹ Still more states have developed guidance for employers and employees to minimize the risk of heat-related illness. But without a national heat standard, millions of outdoor and indoor workers across the country will remain vulnerable to illness and death from occupational heat exposure. An emergency temporary standard is therefore necessary to protect workers from extreme heat while OSHA continues its proposed rulemaking for a permanent standard.

B. Three States Have Already Implemented Emergency Temporary Standards—and Ultimately Permanent Standards—to Mitigate the Grave Danger of Extreme Heat.

In direct response to extreme summer heat, California, Oregon, and Washington have issued emergency temporary standards to protect workers from the grave danger of occupational heat exposure. These state precedents, which have demonstrably reduced heat-related deaths in the workplace, recognize that extreme heat already poses a grave danger to workers, and they can provide a framework for OSHA in setting an emergency temporary standard for summer 2023.

¹⁷⁰ See Cal. Code Regs. tit. 8, § 3395 (covering outdoor workers); Or. Admin. R. 437-002-0156 (covering outdoor and indoor workers); Wash. Admin. Code §§ 296-62-095 to 296-62-09560 (covering outdoor workers); Minn. R. 5205.0110 (covering indoor workers); 7 Colo. Code Regs. § 1103-15-3 (covering agricultural workers).

¹⁷¹ Md. HB0722, 2020 Reg. Sess., <https://mgaleg.maryland.gov/mgaweb/legislation/details/hb0722?ys=2020RS>; Md. SB434, 2020 Reg. Sess., <https://mgaleg.maryland.gov/2020RS/bills/sb/sb0434F.pdf>; Nev. Dep't of Bus. & Indus., Notice of Intent to Act on Proposed Regulations, NAC Ch. 618 (Oct. 14, 2021), <https://www.4safenv.state.nv.us/wp-content/uploads/2021/09/OSHA-Heat-Stress-Reg-R053-20-Fourth-Amended-Notice-Intent-Act-090321.pdf>; Nev. Dep't of Bus. & Indus., Revised Proposed Regulation of the Division of Industrial Relations of the Department of Business and Industry (Feb. 28, 2022), [https://dir.nv.gov/uploadedFiles/dir.nv.gov/content/OSHA/Features/R053-20%20Proposed%20Heat%20Illness%20Regulation%20-%202022.28.22\(3\).pdf](https://dir.nv.gov/uploadedFiles/dir.nv.gov/content/OSHA/Features/R053-20%20Proposed%20Heat%20Illness%20Regulation%20-%202022.28.22(3).pdf). In 2022, Nevada OSHA adopted federal OSHA's National Emphasis Program in a modified form to reflect local factors. Nevada's National Emphasis Program is geared at proactively inspecting indoor and outdoor workplaces in over 70 high-risk industries when the National Weather Service has issued a heat warning or advisory for a local area. Nevada's adoption of the National Emphasis Program will remain effective until cancelled or modified by a change to the federal National Emphasis Program or adoption of a Nevada-specific heat illness regulation. See Memorandum from Nev. Dep't of Bus. & Indus., to Nevada Businesses (May 4, 2022), <https://www.4safenv.state.nv.us/wp-content/uploads/2022/05/Heat-Illness-NEP-Guidance-5-4-221.pdf>.

1. California

In August 2005, after five workplace heat-related fatalities were reported to authorities, California adopted an emergency heat standard—the first of its kind in the nation—to mitigate the risk of occupational heat-related illness and death.¹⁷² Immediately thereafter, the State initiated a rulemaking to develop a permanent heat standard. As part of this rulemaking, Cal/OSHA investigated dozens of reports of heat-related illnesses and found that 38% of the cases occurred in the agriculture industry; 29% in the construction industry; 12.5% in the service industry; 12.5% in the transportation industry; and 8% in the field of public safety.¹⁷³ In those cases, 68% of the affected workers spoke Spanish as their primary language, and 84% of the cases involved outdoor work exclusively.¹⁷⁴ Cal/OSHA further found that in 78% percent of the cases, the worker was medically diagnosed as dehydrated, and the work area had shade in only 24% of the cases.¹⁷⁵

In 2006, California became the first state to pass a permanent heat illness prevention standard applicable to outdoor workers.¹⁷⁶ The Heat Illness Prevention Standard applies to all outdoor places of employment, and it includes provisions on hydration (one quart of potable drinking water per worker per hour); shade (monitoring and providing access, which is required above 80°F, and otherwise, must be timely provided upon request); high-heat procedures for temperatures at or above 95°F;¹⁷⁷ emergency response procedures; acclimatization; training; and heat illness prevention plans.¹⁷⁸ In addition, all employees must be closely observed by a supervisor or designee during a heat wave, which is defined as “any day in which the predicted high temperature for the day will be at least 80 degrees Fahrenheit

¹⁷² Cal. Dep’t of Indus. Rel., Congressional Testimony Re: California’s Heat Illness Prevention Standard (July 22, 2019).

¹⁷³ Memorandum from Janice C. Prudhomme, DO, MPH et al. to Len Welsh, Acting Dir., Cal/OSHA 1 (Feb. 17, 2006), <https://www.dir.ca.gov/dosh/heatillnessinvestigations-2005.pdf>.

¹⁷⁴ *Id.*

¹⁷⁵ *Id.* at 2.

¹⁷⁶ Cal. Code Regs. tit. 8, § 3395; *see also* Cal/OSHA, Heat Illness Prevention Regulation Amendments: Guide for Employers and Employees on the New Requirements (2015), <https://www.dir.ca.gov/dosh/documents/Heat-Illness-Prevention-Regulation-Amendments.pdf>.

¹⁷⁷ These procedures are mandatory for five industries (agriculture, construction, landscaping, oil and gas extraction, and transportation/delivery of agricultural products, construction, or other heavy material) and include (a) ensuring effective communication to supervisors, (b) observing/monitoring employees for symptoms of heat related illness, (c) designating a person authorized to call for emergency medical services and allowing others to call when designee is not available, (d) providing reminders to drink water, and (e) conducting meetings pre-shift. For agricultural workers who are required to work outdoors when temperatures reach or exceed 95°F, ten-minute preventive cool-down rest periods must be provided every two hours, in addition to all other protective measures. Cal. Code Regs. tit. 8, § 3395.

¹⁷⁸ *Id.*

and at least ten degrees Fahrenheit higher than the average high daily temperature in the preceding five days.”¹⁷⁹

Since 2005, when Cal/OSHA first implemented the emergency heat standard, the Agency has investigated all reported heat-related illnesses and fatalities in outdoor places of employment.¹⁸⁰ In addition to determining whether the illnesses and deaths were causally related to occupational heat exposure, the investigations include an evaluation of employers’ compliance with the Heat Illness Prevention Standard.¹⁸¹ These inspections have revealed that fatal illnesses have decreased from ten in 2005 to one or two per year from 2014 to 2018.¹⁸² Based on Cal/OSHA’s evaluations, this stark decrease in heat-related fatalities “is due to its comprehensive heat illness prevention program, which has the Heat Illness Prevention Standard as its centerpiece.”¹⁸³ This decrease is particularly notable because extreme heat events have become more frequent in the state during that same timeframe.¹⁸⁴

While heat-related deaths have decreased in California since implementation of the standard, the total number of non-fatal illnesses increased from 53 in 2008 to a high of 78 in 2017.¹⁸⁵ Cal/OSHA attributes this increase to more accurate reporting; a greater awareness of the signs and symptoms of heat illness among both employees and employers; and increased reporting of environmental factors to medical providers.¹⁸⁶ Another contributing factor may be California’s evolving temperature patterns as a result of climate change, as the state has experienced almost yearly increases in average summer temperatures.¹⁸⁷

California is also developing regulations to address indoor occupational heat exposure.¹⁸⁸ Enacted in 2016, Senate Bill 1167 directed Cal/OSHA “to propose to the Occupational Safety and Health Standards Board for the board’s review and adoption, a heat illness and injury prevention standard applicable to workers

¹⁷⁹ *Id.* § 3395(g)(1).

¹⁸⁰ *See* Congressional Testimony of Victoria Hassid, Chief Deputy Dir., Cal. Dep’t of Indus. Relations before the U.S. House of Representatives Committee on Education & Labor 6 (July 22, 2019).

¹⁸¹ *Id.*

¹⁸² *Id.* at 7.

¹⁸³ *Id.*

¹⁸⁴ *Id.*

¹⁸⁵ *Id.*

¹⁸⁶ *Id.*

¹⁸⁷ *Id.*

¹⁸⁸ *See* Cal/OSHA, Cal/OSHA Research and Standards Health Unit Rulemaking Updates (July 27, 2020), <https://www.dir.ca.gov/dosh/documents/rulemaking-updates.pdf>.

working in indoor places of employment” by January 1, 2019.¹⁸⁹ After extensive research and stakeholder engagement through the rulemaking process, Cal/OSHA released a draft standard in 2019.¹⁹⁰

The current draft standard would apply to all indoor work areas where the temperature equals or exceeds 82°F when employees are present.¹⁹¹ It would also require employers to provide water and cool-down areas, and to develop and facilitate emergency response procedures; employee and supervisor trainings; acclimatization periods with close observation; and heat-illness prevention plans.¹⁹² In addition, if the temperature or heat index in an indoor work area equals or exceeds 87°F, or if the temperature equals or exceeds 82°F when workers are working in areas with high radiant heat or wearing clothing that restricts heat removal, the draft standard would require an assessment of risks and the implementation of control measures.¹⁹³ Under the draft standard, a risk assessment would involve temperature monitoring and the evaluation of other environmental risk factors, while control measures would involve engineering and administrative controls, as well as the use of personal heat-protective equipment.¹⁹⁴

2. Oregon

In July 2021, when unprecedented and fatal heat waves swept the Pacific Northwest, Oregon issued an emergency temporary standard for occupational heat exposure.¹⁹⁵ Oregon’s standard, which was effective for 180 days, required employers to provide access to sufficient shade and drinking water when the heat index was equal to or above 80°F.¹⁹⁶ The rule also required more rigorous protective measures above a heat index of 90°F, including a cool-down rest period in the shade of ten minutes for every two hours of work; the observation of employees for

¹⁸⁹ Cal. Legis. Serv. Ch. 839 (S.B. 1167).

¹⁹⁰ Heat Illness Prevention Draft Text, S.B. 1167, <https://www.dir.ca.gov/dosh/doshreg/Heat-Illness-Prevention-Indoors/Draft-revisions-Apr-22-2019.pdf>.

¹⁹¹ *Id.*

¹⁹² *Id.*

¹⁹³ *Id.*

¹⁹⁴ *Id.*

¹⁹⁵ See Andrew Selsky, *Oregon Adopts Most Protective Heat Rules for Workers in US*, Associated Press (July 8, 2021), <https://apnews.com/article/business-science-health-government-and-politics-environment-and-nature-ecea3ed406610f352f5e3f64850b32f0>; Hal Bernton, *Washington Releases New Heat Rules to Increase Protections for Outdoor Workers*, Seattle Times (July 9, 2021), <https://www.seattletimes.com/seattle-news/washington-releases-new-heat-rules-to-increase-protections-for-outdoor-workers/>.

¹⁹⁶ Or. Admin. Rule 437-002-0155 & 437-004-1130 (effective July 8, 2021); *Oregon OSHA Adopts Emergency Rule*, Ore. Occupational Safety & Health Admin. (July 8, 2021), <https://osha.oregon.gov/news/2021/Pages/nr2021-26.aspx>.

alertness and signs and symptoms of heat illness; and more robust training for supervisors and employees.¹⁹⁷ Oregon's emergency standard applied to both outdoor and indoor workplaces.¹⁹⁸

Also in 2021, in response to an Executive Order by Oregon Governor Kate Brown,¹⁹⁹ Oregon OSHA initiated a rulemaking to develop permanent standards to protect workers from extreme heat and wildfire smoke.²⁰⁰ Oregon OSHA issued proposed heat and wildfire standards in January 2022, and they became effective on June 15, 2022.²⁰¹

Oregon's permanent occupational heat standard is the first in the nation to cover both outdoor and indoor workers. The standard requires employers to provide ample shade and cool water when the heat index reaches 80°F and a rest break schedule when the heat index reaches 90°F.²⁰² The standard also requires employers to develop heat illness prevention plans, train employees and supervisors on heat illnesses, and implement acclimatization periods for employees.²⁰³ Employers and supervisors must also regularly monitor workers when they are exposed to high heat conditions.²⁰⁴

3. Washington

Though Washington first developed a permanent occupational heat standard in 2008, the State issued more protective emergency standards during the record-breaking summer heat waves of 2021 and 2022. Washington is also in the process of updating its permanent occupational heat standard.

As it currently exists, Washington's permanent heat standard applies only to outdoor workers from May 1st to September 30th when employees are exposed to outdoor heat at or above applicable ambient temperatures.²⁰⁵ The applicability of the standard varies based on the clothing worn by the outdoor worker. Specifically,

¹⁹⁷ *Id.*

¹⁹⁸ *Id.*

¹⁹⁹ Exec. Order No. 20-04, Or. Governor Kate Brown (Mar. 10, 2020), https://www.oregon.gov/gov/Documents/executive_orders/eo_20-04.pdf.

²⁰⁰ See *Rulemaking to Protect Employees from Outdoor Workplace Exposures to Excessive Heat*, Or. OSHA, <https://osha.oregon.gov/rules/advisory/heat/pages/default.aspx> (last visited Dec. 20, 2022).

²⁰¹ *Id.*

²⁰² Or. Admin. R. 437-002-0156.

²⁰³ *Id.*

²⁰⁴ *Id.*

²⁰⁵ Wash. Admin. Code §§ 296-62-095 to 296-62-09560.

the standard applies at 89°F for any clothing; 77°F for double layer clothing, including coveralls; and 52°F for nonbreathing clothing, including vapor barrier clothing or chemical resistant suits.²⁰⁶ Under Washington's permanent standard, employers must provide certain protections when the temperature reaches applicable thresholds, such as the provision of suitably cool and readily accessible water such that all employees can drink at least one quart per hour.²⁰⁷

In July 2021, Washington issued an emergency temporary standard for occupational heat exposure for outdoor workers.²⁰⁸ Under Washington's 2021 emergency standard, when the ambient temperature reached 100°F, employers were required to: maintain one or more areas with shade sufficient to accommodate the number of employees on a meal or rest period; ensure that employees took paid preventive cool-down rest periods of at least ten minutes every two hours; allow and encourage workers to take preventive cool-down breaks, as needed; and provide suitably cool water.²⁰⁹

In summer 2022, when extreme heat again struck the Pacific Northwest, Washington issued an emergency occupational heat standard for June 15, 2022, through September 30, 2022.²¹⁰ The 2022 standard was more stringent and protective than the 2021 standard. Specifically, when ambient temperatures were at or above 89°F, employers were required to: provide enough cool water for each employee to drink at least one quart per hour; provide sufficient shade that is large enough for and close enough to workers; encourage and allow workers to take paid preventive cool-down breaks, as needed; implement a ten-minute, paid cool-down break every two hours; monitor temperatures; and have a communication system in place, such as a mandatory buddy rule, regular check-in by phone or radio, or other effective method to catch signs of heat-related illness.²¹¹ Further, if workers exhibited signs of illness, employers were required to relieve workers from duty immediately, provide shade or other means of cooling down, and determine if additional medical attention was needed.²¹²

²⁰⁶ *Id.* § 296-62-09510.

²⁰⁷ *Id.* § 296-62-09540(1).

²⁰⁸ See *Ambient Heat Exposure Rulemaking*, Wash. State Dep't of Lab. & Indus., <https://lni.wa.gov/safety-health/safety-rules/rulemaking-stakeholder-information/ambient-heat-exposure-rulemaking> (last visited Jan. 31, 2023).

²⁰⁹ Wash. Admin. Code § 21-15-017 (effective July 13, 2021).

²¹⁰ See *id.* § 296-62-09555; *Washington State Issues Emergency Heat Standards*, United Farm Workers (June 6, 2022), <https://ufw.org/washington-state-issues-emergency-heat-standards/>.

²¹¹ *Id.*

²¹² *Id.*

Washington is in the process of updating the state’s outdoor occupational heat exposure rule through its permanent rulemaking procedures. The Washington Department of Labor and Industries released draft language for the updated rule in August 2022.²¹³ The proposed revisions contemplate, among other things, year-round applicability; a lower temperature threshold of 80°F; and employee training that covers personal risk factors that may increase susceptibility to heat stress, including a worker’s physical fitness level, pregnancy, and previous heat-related illnesses.

The California, Oregon, and Washington precedents show that emergency temporary standards for occupational heat exposure are both effective and readily implementable. Using these precedents as a model, OSHA should promulgate an emergency temporary standard for occupational heat exposure for summer 2023 as it continues to work toward a permanent standard.

C. Enforcement of Heat Hazards Under the General Duty Clause Is Insufficient to Protect Workers from the Grave Danger of Extreme Heat.

OSHA, on a case-by-case basis, can cite employers for heat stress hazards and workplace safety violations under the General Duty Clause of the Occupational Safety and Health Act, which requires employers to “furnish to each of [their] employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to [their] employees.”²¹⁴ But heat hazards have been historically difficult to enforce. This stems from the fact that OSHA cannot require abatement of a workplace hazard under the General Duty Clause unless it can prove in an enforcement proceeding that specific workplace conditions are hazardous—which has proved difficult to do without an established heat standard.²¹⁵ While OSHA is currently engaged in a proposed rulemaking for a permanent standard, that process is expected to take several years, leaving workers vulnerable to occupational heat stress in the interim. Thus, an emergency temporary standard, which carries the same legal weight as a permanent standard, is necessary to protect workers from the grave danger of extreme heat this coming summer.

Recent decisions have demonstrated the immediate need for a federal occupational heat standard. In *A.H. Sturgill Roofing, Inc.*, a case involving an

²¹³ See Wash. Dep’t of Lab. & Indus., Discussion Draft August 2022 Outdoor Heat Permanent Rule Language (Aug. 2022), <https://lni.wa.gov/safety-health/safety-rules/rulemaking-stakeholder-information/ambient-heat-docs/OHEDiscussionDraft8-2-2022.pdf>.

²¹⁴ 29 U.S.C. § 654(a)(1).

²¹⁵ 86 Fed. Reg. at 59,314–15.

employee who died from heat stroke, the Occupational Safety and Health Review Commission found that OSHA failed to establish the existence of a hazard under the General Duty Clause, noting “the difficulty in addressing this issue in the absence of an OSHA standard.”²¹⁶ In a concurring opinion, then-Chairperson of the Commission Heather MacDougall added that “[excessive heat] is not a cognizable hazard under the [General Duty Clause].”²¹⁷ Thus, without an established heat threshold, it is difficult for OSHA to meet this burden, even in cases where a fatality has occurred.²¹⁸

Similarly, on July 15, 2020, an Occupational Safety and Health Review Commission administrative judge vacated five OSHA citations in cases where OSHA alleged that the U.S. Postal Service exposed employees to extreme heat when they delivered the mail.²¹⁹ In each of the five cases, the judge found that OSHA had not met its burden of establishing a workplace hazard, even though there was evidence that the heat index was as high as 109°F, and the workers were medically diagnosed with heat illnesses.²²⁰ The judge ruled that without a standard, it is “difficult for employers to know when heat is ‘excessive,’” adding that “OSHA has been urged to promulgate a heat stress standard since shortly after the [Occupational Safety and Health] Act went into effect,” over 50 years ago.²²¹

These cases show that without an occupational heat standard, the General Duty Clause alone is an insufficient legal mechanism to enforce workplace heat hazards. Thus, while OSHA continues its proposed rulemaking for a permanent standard, OSHA should promulgate an emergency temporary standard for extreme heat for summer 2023. If OSHA does not renew or extend the emergency temporary standard past the six-month deadline contemplated by the Occupational Safety and Health Act, the standard can serve as a reference point to enforce heat hazards under the General Duty Clause and as guidance for employers on how best to protect workers from extreme heat.

²¹⁶ *Sec’y of Lab. v. A.H. Sturgill Roofing, Inc.*, No. 13-0224, 2019 WL 1099857 (OSHRC Feb. 28, 2019).

²¹⁷ *Id.*

²¹⁸ 86 Fed. Reg. at 59,314 (citing *A.H. Sturgill Roofing, Inc.*, 2019 WL 1099857).

²¹⁹ *Sec’y of Lab. v. U.S. Postal Serv., Nat’l Ass’n. of Letter Carriers (NALC) & Nat’l Rural Letter Carriers’ Ass’n (NRLCA)*, OSHRC Dkt. Nos. 16-1713; 16-1813; 16-1872; 17-0023 & 17-0279, <https://www.oshrc.gov/assets/1/6/16-1713 Decision and Order - dated.html>.

²²⁰ *Id.*

²²¹ *Id.*

III. OSHA Should Issue an Emergency Temporary Standard that Sets a Heat Exposure Threshold and Requires Employers to Implement Preventive Measures to Protect Workers from the Grave Danger of Extreme Heat.

Without an emergency temporary standard, workers will continue to be exposed to extreme occupational heat that can result in severe injury and illness, and even death. These risks will only worsen as the climate crisis progresses, disproportionately affecting vulnerable workers and communities. Thus, we urge OSHA to promulgate an emergency temporary standard by May 1, 2023 that applies when the heat index reaches 80°F and requires employers to provide, at minimum, access to water; access to shaded or cool areas; rest breaks; acclimatization plans; temperature and workload monitoring; heat alert plans; employee and supervisor training; recordkeeping; and heightened protections for vulnerable workers.²²²

A. OSHA’s Emergency Temporary Standard Should Take Effect When the Heat Index Reaches 80°F.

OSHA should promulgate an emergency temporary standard that takes effect when the heat index reaches 80°F, a temperature cited by the National Weather Service as indicating a likelihood of heat disorders with prolonged exposure or strenuous activity.²²³ In its April 2022 National Emphasis Program directive, OSHA explained that a heat index of 80°F is a threshold where “serious occupational heat-related illnesses and injuries become more frequent,” especially when individuals are performing strenuous work in radiant heat.²²⁴ Thus, OSHA inspectors have prioritized heat-related interventions and inspections on days when the heat index exceeds 80°F.²²⁵

²²² The January 26, 2022 comment letter submitted to OSHA by the Attorneys General of New York, California, Maryland, Massachusetts, New Jersey, and Pennsylvania on its advance notice of proposed rulemaking, 86 Fed. Reg. 59,309 (Oct. 27, 2021), provides more detailed recommendations for a permanent standard based on, among other things, state precedents, existing OSHA guidance, the National Institute for Occupational Safety and Health’s Criteria for a Recommended Standard, industrial labor standards, guidance from the U.S. Armed Forces, emergency response standards, and sports medicine guidelines.

²²³ *National Weather Service Heat Index Chart*, Nat’l Weather Serv., <https://www.weather.gov/media/unr/heatindex.pdf> (last visited Dec. 28, 2022); Occupational Safety & Health Admin., National Emphasis Program—Outdoor and Indoor Heat-Related Hazards, CPL 03-00-024 (Apr. 8, 2022), https://www.osha.gov/sites/default/files/enforcement/directives/CPL_03-00-024.pdf.

²²⁴ Occupational Safety & Health Admin., National Emphasis Program, *supra* note 223.

²²⁵ *Id.*

Oregon's permanent heat standard, which covers both outdoor and indoor workers, uses this threshold. Specifically, when the heat index meets or exceeds 80°F, Oregon requires employers to provide workers with cool or cold drinking water and access to a shaded area equipped with mechanical cooling or open to the outside air.²²⁶ Further, when the heat index reaches 90°F, employers are required to implement high heat practices, including rest breaks that meet minimum durations and intervals.²²⁷

Similarly, while Washington's current standard applies to all outdoor workers when the ambient temperature reaches 89°F (and to workers wearing various types of personal protective equipment at lower temperatures), the State's proposed revisions contemplate a lower temperature threshold of 80°F.²²⁸ California's permanent standard also requires additional preventive interventions, such as the mandatory setup of shade, when the ambient temperature reaches 80°F.²²⁹ Though neither is based on the heat index, the Washington and California standards show that 80°F is a critical temperature where intervention is necessary to prevent heat-related illness in the workplace.

Thus, OSHA's emergency temporary standard should apply when the heat index reaches 80°F, and when that threshold is met, require employers to implement protective measures, such as providing adequate water and access to shaded or cool areas.

B. OSHA Should Require Employers to Implement Protective Measures to Minimize the Risk of Occupational Heat-Related Illness.

To significantly reduce the risk of occupational heat-related illness, OSHA should require employers to provide or implement the following protective measures, at minimum, when the heat index reaches or exceeds 80°F.

1. Water

OSHA should require employers to provide adequate amounts of cool potable water in or near the work area and at no cost to the workers when the heat index reaches 80°F. California, Washington, and Oregon's permanent standards all require employers to provide suitably cool potable water so that all employees can

²²⁶ Or. Admin. R. 437-002-0156.

²²⁷ *Id.*

²²⁸ See *Ambient Heat Exposure Rulemaking*, Wash. State Dep't of Lab. & Indus., *supra* note 208.

²²⁹ Cal. Code Regs. tit. 8, § 3395.

drink at least one quart of water per hour.²³⁰ Oregon’s permanent standard further defines cool water as between 66°F and 77°F and cold water as between 35°F and 65°F.²³¹

OSHA should also require employers to encourage the frequent consumption of water when the work environment is hot and employees are likely to be sweating, even if they do not experience strong thirst.²³²

2. Access to Shaded or Cool Areas

OSHA should require employers to provide access to shaded or cool areas as close as practicable to the work area when the heat index reaches 80°F. The California, Oregon, and Washington standards require that the shaded area be either open to the outside air or equipped with mechanical ventilation or cooling.²³³ OSHA should also require that the shaded area be adequately cool. Under the California, Oregon, and Washington standards, “[s]hade is not adequate when heat in the area of shade defeats the purpose of shade, which is to allow the body to cool.”²³⁴ Further, the shaded area should be large enough to accommodate the number of employees on recovery or rest periods without having to be in physical contact with one another.²³⁵

3. Rest Breaks

OSHA should also direct employers to provide and monitor mandatory rest breaks for workers when temperature thresholds are met and encourage workers to take breaks, as needed.²³⁶ For instance, under Oregon’s permanent standard, employers must adopt one of three suggested work/rest cycles, where the frequency

²³⁰ *Id.* § 3395(c); Or. Admin. R. 437-002-0156; Wash. Admin. Code § 296-62-09540(1).

²³¹ Or. Admin. R. 437-002-0156(2)(b).

²³² *See* Cal. Code Regs. tit. 8, § 3395(h)(c); *see also* Minn. Dep’t of Lab. & Indus., MNOSHA Heat Stress Guide 7 (2009), https://mn.gov/admin/assets/heat_stress_guide_tcm36-207189.pdf (recommending that workers hydrate in small amounts frequently, even if they do not experience strong thirst); N.Y. SB S1164A, 2021–2022 Leg. Sess., Purpose of Bill and Justification, <https://www.nysenate.gov/legislation/bills/2021/s1164/amendment/a> (recommending the same in proposed legislation for delivery workers).

²³³ *See* Cal. Code Regs. tit. 8, § 3395(b); Or. Admin. R. 437-002-0156(2)(e); Wash. Admin. Code § 296-62-09520.

²³⁴ *See id.*

²³⁵ *See* Cal. Code Regs. tit. 8, § 3395(b); Or. Admin. R. 437-002-0156(2)(e); Wash. Admin. Code § 296-62-09535.

²³⁶ *See* Cal. Code Regs. tit. 8, § 3395(d)(3) (“Employees shall be allowed and encouraged to take a preventative cool-down rest in the shade when they feel the need to do so to protect themselves from overheating.”)

and duration of the rest period increases as the temperature rises.²³⁷ Under each work/rest cycle, at the very least, a ten-minute rest break is required every two hours when the heat index is 90°F or greater.²³⁸ Under the California standard, an employer must allow and encourage employees to take preventive cool-down rest periods of at least five minutes in the shade as needed, regardless of the temperature.²³⁹ The California standard also prohibits an employer from ordering an employee back to work “until any signs or symptoms of heat illness have abated.”²⁴⁰

Further, OSHA should require that all rest breaks be mandatory and paid so that workers do not skip breaks out of fear of lost wages. In addition, rest breaks should be longer and more frequent if workers are wearing clothing that restricts heat removal, such as coveralls or hazmat suits, which can significantly increase metabolic heat loads.

4. Acclimatization plans

To minimize the risk of heat-related illness, OSHA should require employers to implement heat acclimatization programs for new workers, workers newly exposed to hot environments, workers returning after an absence, and workers who may travel or be transferred to hotter regions for work. California and Oregon’s permanent heat standards define acclimatization as the “temporary adaptation of the body to work in the heat that occurs gradually when a person is exposed to it.”²⁴¹ The standards further provide that, for individuals with no underlying medical conditions, acclimatization peaks within seven to fourteen days of regular work for at least two hours per day in the heat.²⁴² Oregon’s permanent standard also acknowledges that “there is no ‘one-size-fits-all’ acclimatization plan,” and acclimatization may vary based on an individual’s fitness level and personal risk factors.²⁴³

Thus, to ensure that individual workers are properly acclimatized, OSHA should require that a supervisor or designee closely observe workers for signs and symptoms of heat-related illness for their first fourteen days of employment in hot weather conditions. OSHA should also consider requiring employers to implement a gradual workload phase-in for new employees, with 20% of the usual duration of the

²³⁷ Or. Admin. R. 437-002-0156(5)(e)(A)–(C).

²³⁸ *Id.*

²³⁹ Cal. Code Regs. tit. 8, § 3395(d)(3).

²⁴⁰ *Id.* § 3395(d)(3)–(4).

²⁴¹ *Id.* § 3395(b); Or. Admin. R. 437-002-0156(2)(a).

²⁴² *Id.*

²⁴³ Or. Admin. R. 437-002-0156(7).

work in a hot environment on the first day, and for each subsequent day, an increase of no more than 20%. This acclimatization phase-in period is recommended by the National Institute for Occupational Safety and Health and referenced in Oregon's permanent standard and Washington's proposed revised standard.²⁴⁴

5. Temperature and Workload Monitoring

OSHA should require employers to monitor the heat index, which is available in weather applications through the National Weather Service, to determine when relevant temperature thresholds are met in the work area. Employers should also monitor actual cooling conditions in shaded areas and rest areas to ensure that workers are afforded adequate relief from the heat during breaks.

The emergency temporary standard should also include a provision for workload monitoring, especially when the heat index reaches 90°F, at which point rest breaks should become more frequent. Under Oregon's permanent standard, employers are advised to consider the intensity of the work being performed when implementing work/rest cycles during high heat conditions.²⁴⁵ Workload monitoring should also account for any personal protective equipment that an employee is wearing, which can significantly impede the body's ability to cool down.

6. Heat Alert Plans

Relatedly, OSHA should require employers to implement heat alert plans whenever the National Weather Service predicts a heat wave. California requires employers to have a written heat illness prevention plan, which must include the employer's procedures for providing water and shade, implementing acclimatization plans, providing emergency medical services, and protecting workers on high-heat days.²⁴⁶

Once heat thresholds are met, heat alert plans should require heightened monitoring of workers for signs and symptoms of heat illnesses, the postponement of non-urgent work, and longer rest breaks.²⁴⁷ For example, California's high-heat procedures have additional requirements for days when the temperature is above 95°F. Specifically, employers must ensure effective communication between employees and supervisors; observe and monitor employees for symptoms of heat-related illness; designate a person authorized to call for emergency medical services

²⁴⁴ Jacklitsch et al., *supra* note 68, at 34; *see also* Or. Admin. R. 437-002-0156(2)(a); *Ambient Heat Exposure Rulemaking*, Wash. State Dep't of Lab. & Indus., *supra* note 208.

²⁴⁵ Or. Admin. R. 437-002-0156(5)(e).

²⁴⁶ Cal. Code Regs. tit. 8, § 3395(e).

²⁴⁷ Jacklitsch et al., *supra* note 68, at 10.

(and allow others to call when the designee is not available); provide regular reminders to drink water; and conduct pre-shift meetings.²⁴⁸

Heat alert plans should also include a notification system for employees, especially when employees are stationed far from a supervisor. These can include check-in by phone or radio, or the use of “flag conditions,” where the employer or supervisor flies color-coded flags in highly visible positions to communicate hazardous heat conditions.²⁴⁹ Flag conditions could be particularly useful in the agricultural sector, as workers are often dispersed over large areas.²⁵⁰

In addition, heat alert plans should include emergency response procedures for when an employee becomes ill. For instance, in 2015, Cal/OSHA updated its regulations to require employers to implement effective emergency response procedures, such as furnishing reliable communication systems in the work area.²⁵¹ Similarly, OSHA should require employers to develop communication channels for supervisors to follow in the event of an emergency.²⁵² Such a requirement would ensure that workers receive timely professional medical attention for serious illnesses.

7. Employee and Supervisor Training

To ensure the efficacy of the emergency temporary standard, OSHA should also require employers to provide heat-illness prevention training to all employees and supervisors in a language, format, and vocabulary they can easily understand.²⁵³ The training should include a discussion of the employer’s procedures for complying with the requirements of the emergency temporary standard; environmental risk factors; personal risk factors that may affect an individual’s tolerance to heat, such as obesity and chronic illnesses; the role of exertion, clothing, and personal protective equipment in increasing heat loads; the importance of water, rest, shade, and acclimatization; the signs and symptoms of heat-related illness; appropriate first aid responses; and the importance of immediately reporting signs or symptoms of possible heat illness to a supervisor for

²⁴⁸ Cal. Code Regs. tit. 8, § 3395(e).

²⁴⁹ See Dep’t of the Navy, *supra* note 73, at 3–14; United Farm Workers, *supra* note 210 (recommending the buddy system and phone or radio check-ins).

²⁵⁰ See *Washington State Issues Emergency Heat Standards*, United Farm Workers, *supra* note 210.

²⁵¹ Cal. Code Regs. tit. 8, § 3395(f).

²⁵² Jacklitsch et al., *supra* note 68, at 48–51.

²⁵³ See Cal. Code Regs. tit. 8, § 3395(i); Or. Admin. R. 437-002-0156(5); Wash. Admin. Code § 296-62-09560.

medical treatment.²⁵⁴ Supervisors should receive additional training on how to implement the requirements of the emergency temporary standard; monitor weather reports; and respond when an employee exhibits signs or symptoms of heat illness.²⁵⁵

8. Recordkeeping

As part of an emergency temporary standard, OSHA should require employers to keep and submit detailed records of all heat-related illnesses and injuries, regardless of severity. OSHA should also require employers to review the records regularly to identify weaknesses in heat stress protocols, such as heat alert plans, and implement changes to better protect workers.

C. OSHA Should Require Employers to Institute Measures to Protect Vulnerable Workers.

Finally, OSHA should require employers to take targeted steps to protect their most vulnerable workers. For instance, because heat stress can occur even when the heat index is far below 80°F,²⁵⁶ OSHA should require that employee training programs cover various personal risk factors and vulnerabilities that may make workers more susceptible to heat-related illnesses at lower temperatures.

OSHA should also require employers to adopt a whistleblower protection policy and explain it to workers.²⁵⁷ The policy should prohibit any person from discriminating or retaliating against an employee for reporting a heat-related concern or seeking assistance with respect to a heat-related hazard. A whistleblower protection policy will better protect vulnerable workers, such as low-wage, migrant, or undocumented workers, who may be disincentivized from reporting dangerous heat conditions in the workplace.

²⁵⁴ See Cal. Code Regs. tit. 8, § 3395(h); Or. Admin. R. 437-002-0156(9); Wash. Admin. Code § 296-62-09560.

²⁵⁵ See *id.*

²⁵⁶ See Occupational Safety & Health Admin., National Emphasis Program, *supra* note 223, at 5.

²⁵⁷ California's outdoor heat standard contains a provision reminding workers of their rights. See Cal. Code Regs. tit. 8, § 3395(a) n.2 ("This standard is enforceable by the Division of Occupational Safety and Health pursuant to Labor Code sections 6308 and 6317 and any other statutes conferring enforcement powers upon the Division. It is a violation of Labor Code sections 6310, 6311, and 6312 to discharge or discriminate in any other manner against employees for exercising their rights under this or any other provision offering occupational safety and health protection to employees.").

Conclusion

Extreme heat is already a grave danger to the health and safety of outdoor and indoor workers across the country, and climate change is exacerbating this danger. Because an emergency temporary standard for occupational heat exposure is necessary to protect outdoor and indoor workers from heat-related injury, illness, and death during the hottest months of the year, the undersigned Attorneys General urge OSHA to promulgate an emergency temporary standard, incorporating the recommendations set forth above, by May 1, 2023.

Respectfully Submitted,

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February 9, 2023

Page 43 of 44

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February 9, 2023

Page 44 of 44

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