

Hot Topic Getting Hotter: Employer Heat Injury Liability Mitigation in the Age of Climate Change

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Introduction

“We can’t just continue living as if there was no tomorrow, because there is a tomorrow.”¹ The words of Greta Thunberg, a teen climate change activist and TIME Magazine’s 2019 Person of the Year,² are a call to action. Despite reports that the last decade was the hottest ever recorded on earth, driven primarily by record temperatures over just the last five years,³ state and federal government leaders have been slow to enact environmental regulations. To the contrary, in opposition to the call for climate change action, President Trump engaged in an online Twitter feud with Greta Thunberg.⁴ Indeed, the Trump administration rolled back nearly one hundred environmental rules in its first three years.⁵ In doing so, it frequently cited the economic burden to U.S. businesses in meeting environmental regulations as its principal motivation for those regulatory roll backs.⁶ Further, in 2017, President

*JD, Saint Louis University Law School, 2021. Thank you to Professor Miriam A. Cherry for her invaluable feedback and insight, and to the entire Editorial Board and Staff of the *ABA Journal of Labor & Employment Law*.

1. Charlotte Alter, Suyin Hanyes & Justin Worland, *TIME 2019 Person of The Year: Greta Thunberg*, TIME (Dec. 23, 2019), <https://time.com/person-of-the-year-2019-greta-thunberg> [https://perma.cc/B6DM-UJQ9].

2. *Id.*

3. Brady Dennis, Andrew Freedman & John Muyskens, *2019 Capped World’s Hottest Decade in Recorded History*, WASH. POST (Jan. 15, 2020), <https://www.washingtonpost.com/climate-environment/2020/01/15/2010s-hottest-decade-world/?arc404=true> [https://perma.cc/D6TH-3EY9].

4. Derrick B. Taylor, *Trump Mocks Greta Thunberg on Twitter and She Jabs Back*, N.Y. TIMES (Dec. 12, 2019), <https://www.nytimes.com/2019/12/12/us/politics/greta-thunberg-trump.html> [https://perma.cc/DY5C-LC8Z].

5. Nadja Popovich, Livia Albeck-Ripka & Kendra Pierre-Louis, *95 Environmental Rules Being Rolled Back Under Trump*, N.Y. TIMES (Dec. 21, 2019), <https://www.nytimes.com/interactive/2019/climate/trump-environment-rollbacks.html> [https://perma.cc/Y6GW-MJDT].

6. *See* Press Release, The White House, Fact Sheet: President Trump’s Historic Deregulation is Benefitting All Americans (Oct. 21, 2019), <https://www.whitehouse.gov/briefings-statements/president-trumps-historic-deregulation-benefitting-americans> [https://perma.cc/2GJU-DVKA]; *see also* Scott Neuman & Colin Dwyer, *Trump Administration Cuts Back Federal Protections for Streams and Wetlands*, NPR (Jan.

Trump initiated the United States' withdrawal from the 2015 Paris Climate Agreement, a multinational commitment to reduce carbon emissions and increase environmental protection efforts established under President Obama's administration.⁷ Explaining the U.S. withdrawal, President Trump argued the agreement imposes an "unfair economic burden . . . on American workers, businesses, and taxpayers."⁸ Given these perceived economic benefits of climate-change-oriented deregulation, climate-adjacent regulation is likely to remain a hotly debated and highly politicized issue for the foreseeable future.⁹

Despite ongoing Twitter debates, the argument that environmental deregulation is a cost-savings measure is untenable under long-term projections. Rather, climate change places a significant long-range economic burden on the very businesses that the Trump administration and other climate crisis skeptics profess deregulation will help.¹⁰ Indeed, climate change is a rapidly evolving area of research, and understanding it demands risk assessment and preparedness planning across all functions of society.¹¹ With or without government regulation, businesses and organizations are already engaging in such

23, 2020), <https://www.npr.org/2020/01/23/798809951/trump-administration-is-rolling-back-obama-era-protections-for-smaller-waterways> [<https://perma.cc/TH5E-E3RN>] (quoting President Trump as saying that interests in clean water must be "balanced against 'promoting *economic growth*, minimizing regulatory uncertainty, and showing due regard for the roles of the Congress and the States under the Constitution.") (emphasis added).

7. Press Release, Michael R. Pompeo, Sec'y, U.S. Dep't of State, On the U.S. Withdrawal from the Paris Agreement (Nov. 4, 2019), <https://www.state.gov/on-the-u-s-withdrawal-from-the-paris-agreement> [<https://perma.cc/DH4J-S3AU>]. President Biden rejoined the agreement early in his administration. Press Statement, Antony J. Blinken, U.S. Sec'y of State, The United States Officially Rejoins the Paris Agreement (Feb. 19, 2021), <https://www.state.gov/the-united-states-officially-rejoins-the-paris-agreement>.

8. *Id.*

9. See Nicholas Bryner, *The Green New Deal and Green Transitions*, 44 VT. L. REV. 723, 742–43 (2020) (exploring the competing interests of climate change regulation and possible economic burdens on localized labor markets under the Green New Deal and considering transitional approaches to enacting green regulation: "[L]ocal communities and workers experience environmental benefits when a refinery or coal mine closes; however, without some policy effort to smooth the transition or redistribute benefits, that positive impact is offset at the local level by job losses and secondary economic impacts on businesses and industries that rely on the presence of now-displaced workers"); see also David Doorey, *Just Transitions Law: Putting Labour Law to Work on Climate Change*, 30 J. ENV'T L. & PRAC. 201, 205 (2017) ("Environmentalists and labour organizations, key actors that inhabit the respective legal systems, have frequently found themselves on different sides of policy debates.").

10. See U.S. GLOB. CHANGE RSCH. PROGRAM, 2 FOURTH NATIONAL CLIMATE ASSESSMENT: IMPACTS, RISKS, AND ADAPTATIONS IN THE UNITED STATES 25–26 (2018), https://nca2018.globalchange.gov/downloads/NCA4_2018_FullReport.pdf [<https://perma.cc/Y22P-F2TX>] (concluding through application of extensive scientific research that "climate change is expected to cause growing losses to American infrastructure and property and impede the rate of economic growth over this century," and economic losses are expected to exceed hundreds of billions of dollars over the next century).

11. Max Kiefer et al., *Worker Health and Safety and Climate Change in the Americas: Issues and Research Needs*, 40 PAN AM. J. PUB. HEALTH 192, 192 (2016).

planning,¹² and it would be wise for more businesses to adopt self-regulatory safeguards for workers.

In 2004, Asuncion Valdivia (Valdavia) died of preventable heat stroke after working a ten-hour shift picking grapes in a California field for the world's largest table grape grower.¹³ That day, the July temperature exceeded 100 degrees Fahrenheit,¹⁴ well above the 90 degree Fahrenheit heat index considered the threshold for increased susceptibility to heat-related illness.¹⁵ After Valdivia collapsed on the job, his employer told his son to drive Valdivia home instead of obtaining emergency medical services.¹⁶ Tragically, en route home, Valdivia started foaming at the mouth and died.¹⁷ He was only fifty-three years old, and he had worked for Giumarra Vineyards for just five days.¹⁸ Sadly, Valdivia was neither the first nor the last such avoidable excessive environmental heat casualty. That same year, eighteen reported workplace fatalities related to extreme heat exposure were reported,¹⁹ and those numbers have continued to rise.²⁰ By 2018, the most recent

12. See Michael B. Gerrard, *Heat Waves: Legal Adaptation to the Most Lethal Climate Disaster (So Far)*, 40 UNIV. ARK. LITTLE ROCK L. REV. 515, 538 (2018) (identifying the National Fire Protection Association, International Association of Fire Firefighters, and the National Athletic Trainers' Association as having voluntarily instituted heat injury mitigation protocols).

13. Mark Arax, *Bitter Taste in the Grape Fields*, L.A. TIMES (Aug. 30, 2004), <https://www.latimes.com/archives/la-xpm-2004-aug-30-me-stroke30-story.html> [<https://perma.cc/EPW7-F9Q4>]. Notably, grape pickers' dangerous working conditions and poor pay have been scrutinized for decades, including an organized labor strike and consumer boycott led by Cesar Chavez from 1963–1970. See James Rainey, *Farm Workers Union Ends 16-Year Boycott of Grapes*, L.A. TIMES (Nov. 22, 2000), <https://www.latimes.com/archives/la-xpm-2000-nov-22-mn-55663-story.html> [<https://perma.cc/278A-7C8E>]; see also Gladdey Donsanoupit, Comment, *Rights of Pregnant Farmworkers: Do the Existing Regulations Protect Pregnant Farmworkers from Extreme or Hazardous Conditions?*, 27 SAN JOAQUIN AGRIC. L. REV. 141, 141 (retelling the story of a seventeen-year-old pregnant farmworker who died of hyperthermia after working nine hours on a California grape field in May 2008). For more on the Delano Grape Strike of 1965 and an its impact on agricultural labor organizing, see Marc-Tizoc Gonzalez, *Critical Ethnic Legal Histories: Unearthing the Interracial Justice of Filipino American Agriculture Labor Organizing*, 3 U.C. IRVINE L. REV. 991, 992–1001 (2013).

14. Arax, *supra* note 13.

15. See *What Is the Heat Index?*, NAT'L WEATHER SERV., <https://www.weather.gov/ama/heatindex> (last visited Oct. 20, 2021).

16. Arax, *supra* note 13.

17. *Id.*

18. *Id.*

19. BUREAU OF LAB. STATS., U.S. DEP'T OF LAB., TABLE A-9, FATAL OCCUPATIONAL INJURIES BY EVENT OR EXPOSURE AND MAJOR PRIVATE INDUSTRY SECTOR, ALL UNITED STATES, 2004, at 2 (2005), <https://www.bls.gov/iif/oshwc/foi/cftb0204.pdf> [<https://perma.cc/EC3Z-4N6X>].

20. John Vandiver, *Cases of Heat-Related Illnesses on the Rise, Especially Among Marines*, STARS & STRIPES (Apr. 29, 2019), <https://www.stripes.com/news/us/cases-of-heat-related-illnesses-on-the-rise-especially-among-marines-1.578922> [<https://perma.cc/76FZ-4CRN>]. Even limited statistics from the U.S. Bureau of Labor Statistics shows a correlation between rising heat stress fatalities and average annual temperatures. Petition from Pub. Citizen et al., to OSHA to Establish a Heat Standard 13 (July 17, 2018), https://citizenvox.org/wp-content/uploads/2018/07/180717_Petition-to-OSHA-on-Heat-Stress-Signed_FINAL.pdf [<https://perma.cc/A8YH-27JS>].

year for which data is publicly available, there were forty-nine reported workplace fatalities as a result of environmental heat exposure.²¹ Alarming, occupational heat-related fatalities are expected to continue this upward climb, as temperatures also continue to increase.²²

More worrisome, fatality statistics alone fail to paint a proper picture of how serious the risk is to environmental-heat-exposed workers. Although the stories of fatalities often make nightly news, the statistics for non-fatal heat-related injuries in the workplace are even higher and can result in extensive and long-term health implications.²³ In fact, a 2016 study by the National Institute for Occupational Safety and Health (NIOSH) estimates that as many as two in 1,000 U.S. workers are at risk of heat stress.²⁴ Because the scientific community overwhelmingly agrees that climate change is real and the danger is increasing, and particularly in light of government inaction in the United States,²⁵ private employers must themselves address existing and anticipated effects of rising temperatures on the communities and infrastructure under their purview.

A wide range of workers are likely to be affected by ongoing climate change related to specific job functions, including emergency services, construction, agriculture, warehouse workers, and manufacturing.²⁶ These industries, in particular, frequently require employees to spend extended periods of time outside or in warehouses without climate control, while simultaneously engaging in demanding physical labor. Although some research has been done on, and focus paid to, the climate change impact on vulnerable populations (the elderly, the chronically ill, and the economically disadvantaged, for example²⁷), little focus has been placed on the impacts on workers as a category.²⁸

21. *Table Fatal Occupational Injuries by Event or Exposure and Major Private Industry Sector, All United States, 2018*, BUREAU OF LAB. STATS., <https://www.bls.gov/iif/oshwc/foi/cftb0330.htm> [<https://perma.cc/8G48-V89M>].

22. Michael Sainato, *Rising Temperatures Put More US Workers at Risk of Dying from Heat*, GUARDIAN (Jan. 22, 2020), <https://www.theguardian.com/us-news/2020/jan/22/heat-deaths-workers-safety-climate-crisis> [<https://perma.cc/G4BT-A3L9>].

23. See Petition from Pub. Citizen et al., *supra* note 20, at 8–10.

24. BRENDA JACKLITSCH, JON WILLIAMS, KRISTIN MUSOLIN, AITOR COCA, JUNG-HYUN KIM & NINA TURNER, NAT'L INST. FOR OCCUPATIONAL SAFETY & HEALTH, DHHS (NIOSH) PUB. NO. 2016-106, CRITERIA FOR A RECOMMENDED STANDARD: OCCUPATIONAL EXPOSURE TO HEAT AND HOT ENVIRONMENTS 96 (2016), <https://www.cdc.gov/niosh/docs/2016-106/pdfs/2016-106.pdf> [<https://perma.cc/G366-KBME>].

25. Approximately 130 million U.S. workers lack regulatory protection from a heat-stress standard promulgating formal employer responsibilities and liabilities. Petition from Pub. Citizen et al., *supra* note 20, at 1.

26. Cora Roelofs & David Wegman, *Workers: The Climate Canaries*, 104 AM. J. PUB. HEALTH 1799, 1799 (2014).

27. Gerrard, *supra* note 12, at 521.

28. *Id.*; see also Doorey, *supra* note 9, at 204–06 (suggesting a new legal field merging overlapping labor and environmental law issues should be distinguished and noting that “labor law scholars have thus far participated little in the ongoing debates about climate change, and its potential impact on law, legal scholarship, and legal taxonomy”).

This absence of attention is worrisome in light of the population's vast size and reduced control over workplace conditions.²⁹

While workforce risks in the face of climate change have received some attention from national organizations, as well as a handful of local and state governments over the past decade, the federal government and many state legislatures have remained slow to act.³⁰ In fact, in 2012, the Occupational Safety and Health Administration (OSHA) declined to promulgate a heat exposure standard in response to a petition by the Public Citizen's Health Research Group.³¹ Efforts to enact change did not stop there, and in July 2019, the Asuncion Valdivia Heat Illness and Fatality Prevention Act of 2019 (HIFPA) was introduced before the United States House of Representatives,³² and again before the United States Senate in April 2021.³³ The bill, named for Valdivia and motivated in part by rising temperatures worldwide and scientific climate change predictions, seeks to compel OSHA to establish a standard to protect the American workforce from heat-related injury.³⁴ The bill and its accompanying support provides insight into the policies and procedures employers might voluntarily promulgate in the coming years. As of 2021, the legislation remains stalled.

It is axiomatic that worker health and safety impact the labor market in a multitude of ways, including employee productivity and the responsibilities and liabilities employers carry, among others. Although climate-change research supports placing increased demand on local, state, and federal governments to tighten regulations on worker safety, individual employers should increase voluntary efforts to reduce worksite dangers to employees in the face of current liabilities and increasing climate-related risks. This Note focuses on employer responsibilities and liabilities pertaining to heat-related climate change effects and actions that should be taken to limit those liabilities and provide a safe working environment. Section I introduces future climate change predictions and climate's heat-related impact on the human body, as supported by environmental and health experts.

29. Doorey, *supra* note 9, at 204–06.

30. See Charles W. Schmidt, *Beyond Mitigation: Planning for Climate Change Adaptation*, 117 ENV'T HEALTH PERSPS. A306, A307 (2009) (“U.S. officials in particular have been slow to consider health adaptation, she says, both because of funding shortages in this area and because climate-related health problems in this country aren't yet as acute as they are elsewhere in the world.”).

31. Letter from David Michaels, Assistant Sec'y for Occupational Safety & Health, to Sidney Wolfe, Director, Pub. Citizen's Health Rsch. Grp. (June 7, 2012), <https://www.citizen.org/wp-content/uploads/migration/denial-of-heat-stress-petition.pdf> [https://perma.cc/QGW7-Q4CA].

32. Asuncion Valdivia Heat Illness and Fatality Prevention Act of 2019, H.R. 3668, 116th Cong. (2019).

33. Asuncion Valdivia Heat Illness and Fatality Prevention Act of 2021, S.B. 1068, 117th Cong. (2021).

34. *Id.*

Section II explores current and proposed employer responsibilities and liabilities for providing safe working conditions in high temperatures. Finally, Section III proposes that employers voluntarily implement policies and procedures to reduce workforce heat-exposure risks and explores specific preventative measures that should be instituted in the wake of climate change. Returning to the words of Greta Thunberg, efforts must be made to plan for tomorrow.³⁵

While this Note does not address the moral and ethical justifications for employer-initiated heat-injury prevention techniques, we should not ignore this perspective. The human experience is shared by us all, and those in positions of power to benefit from the work of others have an enormous responsibility to make decisions that are moral and ethical in the care of those whose work they manage.

II. What Scientific Research Tells Us About Climate Change and Climate's Effects on the Worker

A. Climate Change

The scientific community has sounded alarms regarding the state of climate change, identifying it as a global crisis in need of immediate attention. In 2017, the U.S. Global Change Research Program (Program) issued its Fourth National Climate Assessment (Climate Assessment) in accordance with Section 106 of the U.S. Global Change Research Act of 1990.³⁶ It is important to note that this study, while mandated by U.S. law, is a stand-alone product of scientific analysis related to climate change, and it is intended to be free from politically motivated messaging.³⁷ The Program's U.S.-focused research and its resulting reports are intended to serve as an "authoritative assessment of the science of climate change . . . to serve as the foundation for efforts to assess climate-related risks and inform decision-making about responses."³⁸

The Climate Assessment is a warning. The research is clear: while the frequency of cold waves and record cold days has decreased over the past century, the frequency of heat waves and record hot days has increased over the past fifty years.³⁹ The Program reports with "high confidence" that "the frequency and intensity of extreme high temperature events are *virtually certain* to increase in the future as global temperature increases."⁴⁰

35. Alter, Hanyes & Worland, *supra* note 1.

36. U.S. GLOB. CHANGE RSCH. PROGRAM, 1 FOURTH NATIONAL CLIMATE ASSESSMENT: CLIMATE SCIENCE SPECIAL REPORT 1 (2017), https://science2017.globalchange.gov/downloads/CSSR2017_FullReport.pdf.

37. *Id.*

38. *Id.*

39. *Id.* at 19.

40. *Id.* at 21 (emphasis in original).

B. Heat's Health-Related Effects on the Worker

Heat is already one of the leading causes of weather-related deaths in the United States,⁴¹ and it is simultaneously on the rise.⁴² Exposure to extreme heat can lead to a myriad of injuries, including heat cramps, heat exhaustion, heatstroke, and hyperthermia.⁴³ Rising temperatures have been linked to chronic kidney disease,⁴⁴ as well as cardiovascular and respiratory disorders.⁴⁵ In addition to risk of death or physical injury, extreme heat exposure is also linked to a decline in both cognitive function⁴⁶ and overall productivity.⁴⁷ When an employee's cognitive function is impaired, additional hazards may also become prevalent, particularly in industries already engaged in hazardous work.

C. Heat Injury Statistics and Limitations

The data shows that people are suffering and dying nationwide from preventable heat-related injuries in the workplace. While statistics shed some light on the nature of workforce environmental risks, it is important to note that available data is limited in scope, and the volume of actual workplace heat-related injuries likely well exceeds available representative data.⁴⁸

The U.S. Bureau of Labor Statistics (BLS) puts out an annual survey of reported occupational injuries and illnesses that resulted in at least one day of missed work. That data shows that exposure to

41. CDC's *Tracking Network in Action: Extreme Heat*, CTNS. FOR DISEASE CONTROL & PREVENTION, <https://www.cdc.gov/nceh/features/trackingheat> [<https://perma.cc/4ENT-VD8B>]; see also Gerrard, *supra* note 12, at 517 ("More people in the United States now die from heat than from any other weather-related event, and the heat-related death numbers are probably understated because 'heat' usually is not the stated cause on death certificates.")

42. *Climate Change: Extreme Heat*, CTNS. FOR DISEASE CONTROL & PREVENTION, <https://ephtracking.cdc.gov/showClimateChangeExtremeHeat.action> [<https://perma.cc/NB6G-8MYV>].

43. U.S. GLOBAL CHANGE RSCH. PROGRAM, *THE IMPACTS OF CLIMATE CHANGE ON HUMAN HEALTH IN THE UNITED STATES: A SCIENTIFIC ASSESSMENT 6* (2016), https://permanent.access.gpo.gov/gpo68498/ClimateHealth2016_FullReport.pdf [<https://perma.cc/7HK8-C5SE>].

44. Kiefer et al., *supra* note 11, at 193.

45. U.S. GLOBAL CHANGE RSCH. PROGRAM, *supra* note 43, at 46, 50, 51.

46. Adel Mazloumi, Farideh Golbabaie, Somayeh Mahmood Khani, Zeinab Kazemi, Mostafa Hosseini, Marzieh Abbasinia & Somayeh Farhang Dehghan, *Evaluating Effects of Heat Stress on Cognitive Function Among Workers in a Hot Industry*, 4 HEALTH PROMOTION PERSPS. 240, 244 (2014).

47. Gerrard, *supra* note 12, at 519. Indeed, a 2018 study of manufacturing in India found that worker productivity declined by as much as four percent per degree Celsius as temperatures exceeded 27 degrees Celsius (80.6 degrees Fahrenheit). E. Somanathan, Rohini Somanathan, Anant Sudarshan & Meenu Tewari, *The Impact of Temperature on Productivity and Labor Supply: Evidence from Indian Manufacturing 1* (Becker Friedman Inst. for Econ. at Univ. Chi. Working Paper No. 2018-69, 2018), <https://epic.uchicago.edu/wp-content/uploads/2019/07/Working-Paper-1.pdf>. Furthermore, a positive correlation was observed between environmental heat and an increase in employee absenteeism. Just a one-degree Celsius increase in the average ten-day temperature increased the probability that a worker would be absent by as much as five percent. *Id.* at 18–22.

48. See Petition from Pub. Citizen et al., *supra* note 20, at 11–13.

excessive environmental heat resulted in the deaths of 783 U.S. workers and the injuries of nearly 70,000 workers between 1992 and 2016.⁴⁹ That said, it is largely understood that the BLS data is a dramatic underestimation of workplace injuries and fatalities. Consequently, anyone looking at these statistics would be wise to think in greater numbers. The statistics are limited by a number of factors, including the reporting regulations themselves,⁵⁰ employer motivations to under-report or avoid the mandate by hiring independent contractors,⁵¹ and worker fear of retaliation or loss of incentives for reporting an injury.⁵² Furthermore, fear of government intervention among both employees and employers in industries with high rates of undocumented and vulnerable workers may operate to silence reporting in those industries.⁵³ Unfortunately, those same industries frequently mirror workplace environments with greater heat injury risks, such as agriculture and construction.⁵⁴ Nonetheless, even the limited data clearly demonstrates a correlation between the annual temperature in the United States and heat-related worker fatalities and injuries.⁵⁵

Even despite the data's limitations, it remains clear that employers nationwide must immediately begin advancing efforts to promote worker health and safety. The correlation between environmental heat and injury, medical evidence of heat-related risks to the human body, and the scientific research showing that we can anticipate annual temperatures will continue to rise must invoke mitigation efforts.

II. Current Laws and Regulatory Schemes

Employer responsibilities and liabilities exist under state and federal laws and regulatory schemes which fall into six primary categories: those (A) established and overseen by OSHA; (B) resulting from workers' compensation laws; (C) arising under employment discrimination statutes; (D) subject to criminal liability; (E) encompassed within third party liability doctrine; and (F) governed by state

49. *Id.* at 8–10.

50. *See* 29 C.F.R. § 1904.7 (2020) (limiting the type of employer required to report workplace injuries and further limiting the type of injuries to be reported to those resulting in death, days away from work, restricted work or transfer to another job, medical treatment beyond first aid, loss of consciousness, or a significant injury or illness diagnosed by a physician or other licensed health care professional).

51. U.S. GOV'T ACCOUNTABILITY OFF., GAO-10-10, WORKPLACE SAFETY AND HEALTH: ENHANCING OSHA'S RECORDS AUDIT PROCESS COULD IMPROVE THE ACCURACY OF WORKER INJURY AND ILLNESS DATA (2009), <http://www.gao.gov/new.items/d1010.pdf> [<https://perma.cc/7UP5-7Q3K>].

52. *Id.*

53. *Occupational Health and Safety Protections for Immigrant Workers*, AM. PUB. HEALTH ASS'N. (Dec. 14, 2005), <https://www.apha.org/policies-and-advocacy/public-health-policy-statements/policy-database/2014/07/09/15/19/occupational-health-and-safety-protections-for-immigrant-workers> [<https://perma.cc/8LRQ-EJ9N>].

54. *Id.*

55. Petition from Pub. Citizen et al., *supra* note 20, at 14.

heat-injury mitigation laws. Furthermore, pending litigation and repeated demands for increased government oversight render this an evolving area of law that should be watched closely. Those areas are further evaluated below.

A. Occupational Safety and Health Administration Regulations

OSHA is tasked with ensuring safe working conditions through setting and enforcing work-safety standards, as well as providing training and compliance assistance.⁵⁶ Since its founding, OSHA and similar state agencies have partnered to improve workplace safety, resulting in a sixty-five percent reduction in work-related injury and deaths.⁵⁷ But, as to a limitation on that work-injury reduction effort, to date OSHA has not implemented an enforceable cross-industry occupational heat standard.

Although OSHA has established a Heat Illness Prevention Campaign (the campaign),⁵⁸ it has no enforcement mechanism.⁵⁹ The campaign recommends that employers provide employees with access to shade, water, and rest periods, as well as acclimatization periods for new employees.⁶⁰ It evinces OSHA's recognition that heat-injury prevention is a subject worthy of affirmative preventative workforce measures, although the agency has declined to establish a specific and enforceable heat-injury regulation.

Still, employers may be held liable under OSHA's general duty clause, which, applicable only in the absence of a specific hazard-related regulatory standard, requires employers to furnish their employees with a workplace free from "recognized hazards that are causing or likely to cause death or serious physical harm."⁶¹ Additionally, employers are required to train staff to identify and avoid injury risk factors.⁶² Application of the general duty clause requires four elements: (1) the employer failed to keep the workplace free of a hazard to which employees were exposed; (2) the hazard was recognized; (3) the hazard caused, or was likely to cause, death or serious physical harm;

56. OCCUPATIONAL SAFETY & HEALTH ADMIN., U.S. DEP'T OF LAB., OSHA 3302-01R 2020, ALL ABOUT OSHA 4 (2020), https://www.osha.gov/sites/default/files/publications/all_about_OSHA.pdf [http://perma.cc/8N4Y-F4PL] [hereinafter All About OSHA].

57. *Id.*

58. *Heat*, OCCUPATIONAL SAFETY & HEALTH ADMIN., <https://www.osha.gov/heat-exposure> [https://perma.cc/Y3BK-QF6T].

59. Anna M. Barry-Jester, *What Does Climate Change Mean for Worker Safety?*, BENEFITS PRO (July 23, 2019), <https://www.benefitspro.com/2019/07/23/what-does-climate-change-mean-for-worker-safety/?slreturn=2019112120159> [https://perma.cc/7WFY-WZWM].

60. *Heat*, *supra* note 58.

61. General Duty Clause, 29 U.S.C. § 654(a)(1). For more information on the clause and its enforcement, see William J. Wahoff, *Industrial Standards: How Does OSHA Use Them to Prove Its Case Under the General Duty Clause?*, 34 A.B.A. J. LAB. & EMP. L. 1, 2 (2019) (explaining the clause and how OSHA uses consensus standards to enforce it).

62. Safety Training and Education Rule, 29 C.F.R. § 1926.21(b)(2) (2020).

and (4) it was feasible to correct the hazard.⁶³ Although employers can be cited for violating the general duty clause when they fail to take reasonable steps to prevent or abate a recognized hazard,⁶⁴ reasonableness remains subjective.⁶⁵ Thus, enforcement is difficult but not impossible under this subjective standard.⁶⁶

In the absence of any specific climate-related regulations, OSHA is limited to enforcing climate-related hazards under the general duty clause.⁶⁷ In light of that limitation, citations resulting from heat-related workplace injuries are commonly only applied after a worker has been killed or hospitalized as a result of the hazardous heat conditions.⁶⁸ As recently as August 2019, OSHA used the general duty clause to cite an employer for climate-related risks to employee safety.⁶⁹ The citation, levied against the United Parcel Service (UPS), followed an investigative journalism report citing more than 100 UPS employees hospitalized for heat-related injuries over a three-year period, spanning 2015 through 2018.⁷⁰ UPS, which has fought the citation, faces a penalty of \$13,260, the maximum allowable under current law.⁷¹ For a company

63. *Fabi Constr. Co. v. Sec'y of Labor*, 508 F.3d 1077, 1081 (D.C. Cir. 2007).

64. Occupational Safety & Health Admin., Standard Interpretation Letter on Elements Necessary for a Violation of the General Duty Clause (Dec. 13, 2003), <https://www.osha.gov/laws-regs/standardinterpretations/2003-12-18-1> [<http://perma.cc/NK35-KFV9>].

65. See Press Release, Public Citizen, As Climate Heats up, Government Must Protect Workers From Heat (July 17, 2019), <https://www.citizen.org/news/as-climate-heats-up-government-must-protect-workers-from-heat> [<http://perma.cc/B5HA-UUXL>] [hereinafter Public Citizen Press Release] (noting that “from 2013 through 2017, Cal/OSHA, with a heat standard since 2006, performed 50 times more inspections than OSHA in which there was one or more citations or violations concerning heat”).

66. *Id.*; see also Wahoff, *supra* note 61, at 2 (“OSHA will not, as a general matter, use the General Duty Clause to do any of the following: (1) enforce “should” standards, i.e., standards that do not contain mandatory language, (2) require abatement methods not required by a specific standard, or (3) cover categories of hazards that are specifically exempted by an OSHA standard.”).

67. See News Release, U.S. Dep’t of Lab., OSHA Region 1 News Release 13-2361-BOS/BOS 2013-220, US Postal Service Cited by US Labor Department’s OSHA After Heat-Related Death of Medford, Mass., Mail Carrier in July Cited for Inadequate Heat Stress Program and Communication of Health Hazards to Carriers (Dec. 16, 2013), <https://www.osha.gov/news/newsreleases/region1/12162013-0> (citing the U.S. Postal Service for violating the General Duty Clause after a postal worker died on his mail delivery route from heat stress during a heat advisory).

68. Katie Lawrie, *As Planet Warms, Advocates Urge U.S. to Set Rules to Protect Workers From Heat*, NPR (Aug. 27, 2018), <https://www.npr.org/2018/08/27/642237217/as-planet-warms-advocates-urge-u-s-to-set-rules-to-protect-workers-from-heat> [<https://perma.cc/BN9N-X9KS>].

69. News Release, U.S. Dep’t of Lab., OSHA News Release—Region 4: 19-1468-ATL (303), U.S. Department of Labor Cites United Parcel Service After Employee Injury in West Palm Beach County, Florida (Aug. 27, 2019), <https://www.osha.gov/news/newsreleases/region4/08272019>.

70. Adiel Kaplan & Lisa R. Seville, *OSHA Cites UPS for “Excessive Heat” Exposure After NBC Investigation*, NBC News (Aug. 27, 2019), <https://www.nbcnews.com/business/economy/osha-cites-ups-excessive-heat-exposure-after-nbc-investigation-n1046991> [<https://perma.cc/88C4-QUTE>].

71. *Id.*

that boasted over \$70 billion in revenue in 2018⁷² and employs nearly 400,000 employees,⁷³ a \$13,000 fine is arguably insignificant.

OSHA also requires employers to provide workers with personal protective equipment.⁷⁴ Although OSHA has particular mandates for some industries, general weather-related heat protection falls under the agency's general enforcement guidelines, which requires that employers assess workplace conditions and identify possible current or future risks for which they must outfit the affected workforce.⁷⁵ As with the general duty clause, this general guideline is difficult, but not impossible, to enforce.

B. Workers' Compensation

Work-related illness and injuries currently cost the United States economy more than \$1 billion per week in workers' compensation costs alone.⁷⁶ Absent preventative measures, that amount should be expected to rise along with temperatures.

Under applicable workers' compensation laws, an employer may be responsible for workers' compensation benefits arising from an employee's climate-related injuries.⁷⁷ For example, in *Parham v. Swift Transportation Co., Inc.*, a worker suffered acute renal failure while working in extreme heat.⁷⁸ The court found that the worker's injury arose from his employment and, therefore, was a compensable workers' compensation claim.⁷⁹ There, the claimant unloaded a trailer in humid weather exceeding 90 degrees Fahrenheit.⁸⁰ The claimant reported to his supervisor that he was feeling ill.⁸¹ He was later diagnosed with fatigue, a urinary tract infection, and acute renal failure, conditions of which the claimant had no history prior to the incident.⁸² The court concluded the claimant's job activities and the work conditions caused the renal failure, entitling him to workers' compensation benefits.⁸³

Recent findings from the Upjohn Institute for Employment Research have identified a correlation between extreme heat and a rise

72. Jeff Berman, *UPS Reports Solid Q4 and Full-Year 2018 Earnings Results*, LOGISTICS MGMT. (Jan. 31, 2019), https://www.logisticsmgmt.com/article/ups_reports_solid_q4_and_full_year_2018_earnings_results [https://perma.cc/M77D-FDEN].

73. Kaplan & Seville, *supra* note 70.

74. General Requirements Rule, 29 C.F.R. § 1910.132 (2020).

75. *See* 29 C.F.R. § 1915.152 (2020) (shipyard); *id.* § 1917.91-95 (maritime); *id.* § 1918.101-05 (longshoring); *id.* § 1926.95-106 (construction).

76. ALL ABOUT OSHA, *supra* note 56 (also highlighting the indirect costs of injuries, such as "lost productivity, employee training and replacement costs, and time for investigations following injury").

77. *See Parham v. Swift Transp. Co., Inc.*, 663 S.E.2d 769, 771 (Ga. Ct. App. 2008).

78. *Id.*

79. *Id.*

80. *Id.*

81. *Id.*

82. *Id.*

83. *Id.*

in workers' compensation claims.⁸⁴ Taking longitudinal data from Texas workers' compensation claims, researcher Marcus Dillender found that daily temperatures in excess of 70 degrees Fahrenheit are associated with higher rates of worker injuries and compensation claims.⁸⁵ When temperatures exceeded 100 degrees Fahrenheit, same-day workers' compensation claim rates rose by 7.6–8.2%, and three-day claim rates rose by 3.5–3.7%.⁸⁶

This data is particularly noteworthy, as temperatures continue to rise. Failure to advance worker safety can only be expected to increase workplace temperature-related workers' compensation claims in the coming years. Rising worker's compensation claims demonstrate just one real economic impact of climate change.

C. *Employment Discrimination Law*

Over the years, the federal government has promulgated a number of laws and regulations intended to combat discriminatory employment practices targeting historically marginalized populations, and many states have enacted similar state statutes. Among those anti-discrimination laws, employers carry responsibilities and liabilities relative to employee heat injury risks. For example, the Americans with Disabilities Act (ADA) prohibits employment discrimination on the basis of a person's disability, and it requires that employers engage in an interactive process with covered employees to make reasonable accommodations in the workplace.⁸⁷ The Equal Employment Opportunity Commission (EEOC) has promulgated a number of policies related to ADA enforcement, including limits on employer-initiated medical inquiries and evaluations.⁸⁸ Because an employee's reaction to heat can be influenced by many factors, including the person's physical condition, medications, and medical conditions, the ADA may require an employer to engage at-risk employees in specific statutorily required accommodation processes.

D. *Criminal Liability*

State laws may also impose criminal liability on employers for workers' climate-related injuries. In the 1989 case *People v. Chicago*

84. Marcus Dillender, *Climate Change and Occupational Health: Are There Limits to Our Ability to Adapt?* 34–35 (Upjohn Inst. for Emp. Rsch. Working Paper No. 19-299, 2019), https://research.upjohn.org/cgi/viewcontent.cgi?article=1317&context=up_work_ingpapers [perma.cc/K58J-A67N].

85. *Id.* at 24.

86. *Id.* at 34.

87. Americans With Disabilities Act, 42 U.S.C. §§ 12101–12103, 12111–12213 (2020).

88. See U.S. EQUAL EMP. OPPORTUNITY COMM'N, EEOC-CVG-2000-4, ENFORCEMENT GUIDANCE ON DISABILITY-RELATED INQUIRIES AND MEDICAL EXAMINATIONS OF EMPLOYEES UNDER THE AMERICANS WITH DISABILITIES ACT (ADA), at General Principles.A n.7 (2000), https://www.eeoc.gov/policy/docs/guidance-inquiries.html#N_7_ [perma.cc/W5HA-BMV4].

Magnet Wire Corp., the Illinois Supreme Court held that an employer can be held criminally liable for battery and reckless conduct under state criminal law for failing to provide adequate heat-injury safety measures.⁸⁹ There, workers suffered dangerously overheated working conditions as a result of improper ventilation.⁹⁰ Furthermore, *Chicago Magnet Wire* has been followed in Arizona, New York, and Michigan.⁹¹ Thus, as employee heat-injury risks continue to rise, employers' criminal liability for failure to mitigate heat injury risks may follow.

E. *Respondeat Superior*

Respondeat superior, or vicarious liability, is a well-known legal doctrine that assigns liability to employers—or principals from the framework of agency law—for the tortious conduct of employees acting within the scope of employment.⁹² As previously noted, extreme heat exposure is also linked to a decline in cognitive function,⁹³ and that decline in function could mean other injuries to additional workers or customers, and a concomitant rise in employer vicarious liability.

For example, between 2014 and 2019, OSHA cited the United States Postal Service (USPS) multiple times for failure to mitigate environmental heat hazards, many of which involved vehicular hazards to third parties.⁹⁴ Most recently, the USPS was fined nearly \$150,000 after the 2018 death of a postal worker.⁹⁵ Tragically, the employee, sixty-three-year-old Peggy Frank, was found unresponsive in her mail truck on a day when the local Los Angeles temperatures topped 117 degrees Fahrenheit, and her death was attributed to the day's extreme temperature.⁹⁶ Sadly, Frank's story was not an isolated event. In fact, OSHA data indicates that between January of 2015 and October of 2018, "93 USPS employees were hospitalized for confirmed

89. *People v. Chi. Magnet Wire Corp.*, 534 N.E.2d 962, 967 (Ill. 1989).

90. *Id.* at 963.

91. See *State v. Far W. Water & Sewer Inc.*, 228 P.3d 909, 919 (Ariz. Ct. App. 2010); *People v. Pymm*, 563 N.E.2d 1, 7 (N.Y. 1990); *People v. Hegedus*, 443 N.W.2d 127, 132 (Mich. 1989).

92. RESTATEMENT (THIRD) OF AGENCY § 2.04 (AM. L. INST. 2006). Jurisdictions often define conduct as within the scope of employment when it is done in some part to further the employer's business. See *Cluck v. Union Pac. R.R. Co.*, 367 S.W.3d 25, 29 (Mo. 2012); *Grease Monkey Int'l Inc. v. Montoya*, 904 P.2d 468, 473 (Colo. 1995).

93. Mazloumi et al., *supra* note 46, at 244.

94. David J. Neal, *U.S. Postal Service Fighting \$129,336 Fine for Making Mail Carriers Deliver in Heavy Heat*, MIAMI HERALD (Mar. 6, 2019), <https://www.miamiherald.com/news/state/florida/article227218519.html> [perma.cc/58KW-GTH5].

95. News Release, U.S. Dep't of Lab. OSHA News Release—Region 9, U.S. Department of Labor Cites U.S. Postal Service After Heat-Related Worker Fatality in Southern California (Jan. 10, 2019), <https://www.osha.gov/news/newsreleases/region9/01102019> [perma.cc/VX5G-V4M6].

96. Dave Quinn, *Postal Carrier, 63, Found Dead in Her Truck Amid Record Temperatures Was Months From Retirement*, PEOPLE (July 10, 2018), <https://people.com/human-interest/postal-carrier-dies-117-degrees-peggy-frank> [https://perma.cc/ZTG5-NJWU].

or suspected heat-related illness.⁹⁷ While the data does not indicate how many of those workers were operating in circumstances that put them in contact with members of the public, it is not difficult to imagine that many, if not all, were operating in places that could put third parties at risk. In fact, Frank, herself, was operating a mail truck at the time she suffered heat stress.⁹⁸ Had Frank lost consciousness or suffered impaired cognitive function that resulted in an accident at the time of the incident, USPS could have been further liable for injuries to others that day. Construction workers, emergency services personnel, and delivery drivers like Frank are just some examples of workers who, should they suffer a heat stress emergency on the job, could injure others in the process thereby increasing employer liability for damages under the *respondeat superior* doctrine.

F. Specific State Statutes

To date, three states have passed substantive regulations addressing workplace weather-related risks for extreme heat exposure: California,⁹⁹ Washington,¹⁰⁰ and Minnesota.¹⁰¹ In 2005, California became the first state to promulgate a heat illness prevention standard when it passed Title 8 of the California Code, Section 3395.¹⁰² Since that time, a handful of other states have brought forth and debated heat-related injury legislation, but the regulatory outcomes remain largely underwhelming in light of the global workforce threat.

California's original heat-injury prevention law remains the most comprehensive of any state model. The statute went into effect in 2006 and has since been amended to increase employee protections.¹⁰³ To date, the law requires employers to develop, put in writing, and implement effective procedures for ensuring employee access to sufficient water and shade.¹⁰⁴ Additionally, employers are required to set and implement procedures for high heat, emergency response, and acclimatization methods.¹⁰⁵ Those procedures must be provided in writing in both English and in the language understood by the majority of employees.¹⁰⁶ They must be available to employees at the worksite, and

97. Maryam Jameel, *Extreme Heat Doesn't Stop the Mail—Even at the Cost of Postal Workers' Health*, CTR. FOR PUB. INTEGRITY (Aug. 6, 2019), <https://publicintegrity.org/inequality-poverty-opportunity/workers-rights/worker-health-and-safety/extreme-heat-post-worker-health> [<https://perma.cc/4E5T-ZLP6>].

98. Quinn, *supra* note 96.

99. CAL. CODE REGS. tit. 8, § 3395 (2019).

100. WASH. ADMIN. CODE § 296-62-095-60 (2020).

101. MINN. STAT. § 5205.0110 (2019). Additionally, New York has passed a statute requiring state agencies to provide sun safety information to state employees who spend more than a total of five hours per week outdoors. N.Y. LAB. LAW § 218-A (2019).

102. CAL. CODE REGS. tit. 8, § 3395.

103. *Id.*

104. *Id.*

105. *Id.*

106. *Id.*

to representatives of California and OSHA, upon request.¹⁰⁷ In 2018, the California Court of Appeal first found employer liability under the law in *Jackpot Harvesting Co., Inc. v. Superior Court*.¹⁰⁸ Responding to a wage and hour dispute, the Court of Appeal held that employers are required to pay workers for mandatory rest periods granted in compliance with the heat-injury law.¹⁰⁹ Although California's current law only applies an outdoor heat stress standard, the state is expected to enact a regulation for indoor workplaces in the near future.¹¹⁰

Much less comprehensive than its California counterpart, Washington state's Outdoor Heat Exposure rule merely requires employers to provide outdoor workers with safety training, available drinking water, and paid rest breaks.¹¹¹ The law is only enforceable from May 1 through September 30 each year.¹¹² In a 2015 ruling under the statute, the Washington Supreme Court held that employers must actually "promote meaningful breaks."¹¹³ Accordingly, it is insufficient under the law to merely accommodate for breaks; the employer must actively promote those breaks.¹¹⁴ One notable limitation to Washington's law is the absence of a requirement for employers to monitor actual workplace temperatures under the statute.¹¹⁵

Diverging from the more common focus on outdoor work environments, Minnesota law codifies requirements for temperature control and ventilation for indoor facilities.¹¹⁶ Under the law, employers are required to provide training on heat-exposure hazards if temperatures are expected to approach the regulation's express limits pursuant to an established heat stress standard.¹¹⁷ An employer's failure to abate indoor-workroom temperature violations or to submit certification confirming a violation has been corrected may expose an employer to administrative citations and fines.¹¹⁸ Minnesota has, to date, declined to

107. *Id.*

108. *Jackpot Harvesting Co., Inc. v. Superior Court*, 26 Cal. App. 5th 125, 134 (2018).

109. *Id.*

110. Robert Beverly, *California Brings Heat Illness Prevention Regulations Indoors*, ACHR NEWS (Oct. 15, 2018), <https://www.achrnews.com/articles/139880-california-brings-heat-illness-prevention-regulations-indoors> [perma.cc/2TRQ-TLKU].

111. WASH. ADMIN. CODE § 296-62-095 (2020); *see also* Lopez Demetrio v. Sakuma Bros. Farms, Inc., 355 P.3d 258, 263 (Wash. 2015) (holding paid rest breaks are required for outdoor employees pursuant to the code).

112. WASH. ADMIN. CODE § 296-62-095 (2020).

113. *Lopez Demetrio*, 355 P.3d at 263.

114. *Id.*

115. Ashley M. Gregor, Note, *Toward a Legal Standard of Tolerable Heat*, 44 COLUM. J. ENV'T L. 479, 501 n.116 (2019).

116. MINN. STAT. § 5205.0110 (2019).

117. *Id.*

118. *See* Peterson v. UPS, Inc., No. A15-0540, 2015 Minn. App. LEXIS 1161, at *4 (Dec. 21, 2015).

pass an outdoor heat-standard regulation, likely reflecting the state's less severe average outdoor temperatures and accompanying threat.¹¹⁹

In spite of the limited number of state regulations, it remains important for employers to keep a pulse on these state laws for a number of reasons. A multi-territorial employer might find it advantageous to establish company-wide policies that meet the strictest state law in which it maintains a workforce, to ensure universal state-law compliance. Additionally, recognizing that state and local governments are considering statutory opportunities for workforce heat-injury prevention, employers should regard these demands as part of a changing regulatory landscape with associated liabilities and responsibilities that will likely continue to expand in coming years.

III. Proposed Legislative Changes

The current state of affairs demonstrates that the absence of clear regulatory guidelines is insufficient to protect workers.¹²⁰ In the wake of rising temperatures around the world, the consequences of government inaction can equally be expected to increase. In spite of the dangers highlighted herein, many industries may lack the short-term motivation required to self-police the increasing demands for employee safety, and some government officials recognize that the status quo is unsustainable. That awareness is represented in proposed legislative changes.

Multiple organizations have lobbied for the promulgation of specific federal regulations. NIOSH, for example, has recommended that OSHA set specific heat-injury prevention standards and enact an enforcement mechanism.¹²¹ A version of that proposal has been made three times since 1972, with the most recent proposal made in

119. See MINN. STAT. § 5205.0110. Indeed, in July 2019, workers at a Minnesota Amazon.com fulfillment warehouse participated in a strike to demand, among other things, air conditioning at the indoor facility. Brandy Zadrozny & Michael Cappetta, *On the Other Side of Prime Day, Amazon Workers Brace for "Two Months of Hell,"* NBC NEWS (July 15, 2019), <https://www.nbcnews.com/tech/tech-news/private-facebook-group-amazon-workers-brace-prime-day-n1029786> ("[S]ome warehouses need air conditioning in the summer months, 'so that people aren't passing out left and right for heat exhaustion,' one poster said.")

120. See *Statement: With Hundreds of Workers Dying, OSHA's Denial of Petition for a Heat Stress Standard Is Shortsighted*, PUB. CITIZEN (July 5, 2012), <https://www.citizen.org/article/statement-with-hundreds-of-workers-dying-oshas-denial-of-petition-for-a-heat-stress-standard-is-shortsighted> [<https://perma.cc/N8HR-D5J3>]; see also Kate Davidson, *Amazon Workers Describe Heat and Noise at Portland Warehouse*, OPB NEWS (July 12, 2019, 7:45 PM), <https://www.opb.org/news/article/amazon-flex-portland-warehouse-working-conditions> [<https://perma.cc/BKP9-B44H>]; Bob D'Angelo, *Postal Worker Cooked Steak on Hot Dashboard to Show Unsafe Conditions, Arizona Lawmaker Says*, WSB-TV ATL. (Aug. 5, 2019), <https://www.wsbtv.com/news/trending-now/postal-worker-cooked-steak-on-hot-dashboard-to-show-unsafe-conditions-arizona-lawmaker-says/973053332> [<https://perma.cc/CN6S-KRWA>].

121. Lawrie, *supra* note 68.

2016.¹²² Each time, OSHA has declined to act.¹²³ In July 2018, Public Citizen, a nonprofit lobbying organization for worker safety, among other things, petitioned OSHA to establish heat-stress standards for the U.S. workforce.¹²⁴ Former OSHA Director David Michaels suggests that the agency's history of declining to enact a heat-injury standard in response to petitions calling for such action has resulted from limited agency resources and personnel focused on other regulation-setting demands.¹²⁵ Notably, Michaels recently expressed support for Public Citizen's 2018 petition for an OSHA heat-stress standard.¹²⁶

At the federal level, the Senate's proposed HIFPA seeks to compel OSHA to issue an occupational safety and health standard to protect workers from heat-related injuries and illnesses.¹²⁷ The bill was originally introduced in the House by California Congresswoman Judy Chu¹²⁸ and is modeled in part by the California heat injury prevention law that Chu helped pass.¹²⁹ It would require OSHA to establish federal regulations limiting the duration for which an employee can be exposed to extreme heat and granting workers paid breaks in cool spaces with water access.¹³⁰ In addition to the proposal under HIFPA, OSHA should also consider regulating personal protection equipment under extreme heat-related weather conditions. Moisture-wicking and heat-resistant clothing and wearable equipment should be mandated for employees working under certain temperature conditions. Although HIFPA is not expected to pass under the current congressional makeup,¹³¹ employers should expect iterations of the law to continue to be brought forward in some form as temperatures continue to rise. Even-

122. *Id.*

123. *Id.*

124. Petition from Pub. Citizen et al., *supra* note 20, at 14; *see also* PUB. CITIZEN, EXTREME HEAT AND UNPROTECTED WORKERS 25 (2018), https://www.citizen.org/wp-content/uploads/migration/extreme_heat_and_unprotected_workers.pdf [<https://perma.cc/R8T3-XZRZ>] (compiling the research and data from which the Petition to OSHA was supported).

125. Lawrie, *supra* note 68.

126. Public Citizen Press Release, *supra* note 65.

127. Asuncion Valdivia Heat Illness and Fatality Prevention Act of 2019, S.B. 1068, 116th Cong. (2019).

128. Press Release, Judy Chu, Rep., U.S. House of Rep., Rep. Chu Introduces Heat Stress Bill to Protect Workers (July 11, 2019), <https://chu.house.gov/media-center/press-releases/rep-chu-introduces-heat-stress-bill-protect-workers> [<https://perma.cc/U2M9-3VFA>].

129. *Lawmakers Introduce Bill Pushing OSHA to Protect Workers Against Heat Stress*, OCCUPATIONAL HEALTH & SAFETY (July 16, 2019), <https://ohsonline.com/articles/2019/07/16/lawmakers-introduce-bill-pushing-osha-to-protect-workers-against-heat-stress.aspx> [<https://perma.cc/35S6-9M9Q>].

130. S.B. 1068 § 3(B).

131. The U.S. government's Republican leadership has a long history of opposing policies intended to address climate change or limit employer autonomy over its workforce. Yu Luo, Jiaying Zhao & Rebecca M. Todd, *Climate Explained: Why Are Climate Change Skeptics Often Right-Wing Conservatives?*, CONVERSATION (Sept. 18, 2019, 7:01 PM), <http://theconversation.com/climate-explained-why-are-climate-change-skeptics>

tually, Congress will likely have no choice but to act, absent OSHA successfully implementing heat injury regulations without congressional mandate.¹³²

Similarly, states remain slow to act. In 2019, representatives in the Florida House proposed a Heat Illness Prevention bill.¹³³ That house bill sought to create a state-wide standard for outdoor workers to have access to drinking water and shade and to receive ten minute rest breaks enforced after every two hours of outside labor.¹³⁴ Additionally, it would have required employee training on how to spot warning signs of heat stroke, and establish a two-week acclimation period for workers.¹³⁵ For unannounced reasons, the bill was quashed while still under review in Florida's House Workforce Development and Tourism Subcommittee in May 2019.¹³⁶ A similar Florida Senate bill failed in the Health Committee on the same day.¹³⁷ Nonetheless, these proposals offer insight into future legislative efforts, and employers should anticipate increased state regulation as temperatures rise.

IV. Recommendations for Employers

Given the slow regulatory process taking shape on this topic, employers would be wise to begin voluntarily implementing guidelines to reduce employees' heat exposure risks. In light of workers' compensation claims and respondeat superior liabilities, and the costs associated with reduced productivity, employers should expect that reactive heat-injury expenses will balloon in the coming years absent proactive measures to avoid such costs.

So what is an employer to do? Looking to the experts and the industries that have voluntarily applied reliable research for mitigating these risks offers many possible solutions. For example, recognizing high risks of heat injury in the uniformed services, each branch of the United States military has instituted some form of heat-standard index and guidelines intended to combat service members' heat injury risk.¹³⁸ Those internal policies and procedures can be very informative.

-often-right-wing-conservatives-123549 [https://perma.cc/9K4G-WP8Z]. With the Senate currently evenly split, the bill is unlikely to pass at this time.

132. Notably, on October 27, 2021, the Federal Register published an advance notice of proposed rulemaking indicating that "OSHA is initiating rulemaking to protect indoor and outdoor workers from hazardous heat" and requesting information useful in setting forth such a rule. Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings, 86 Fed. Reg. 59,310 (Oct. 27, 2021).

133. See H.B. 1285, Reg. Sess. (Fla. 2019), https://www.flsenate.gov/Session/Bill/2019/1285 [https://perma.cc/S7T7-4Q43].

134. *Id.*

135. *Id.*

136. *Id.*

137. See S.B. 1538, Reg. Sess. (Fla. 2019), https://www.flsenate.gov/Session/Bill/2019/1538 [https://perma.cc/W2BC-9CHR].

138. See DEP'T OF THE NAVY, NAVMED P-5010-3, MANUAL OF NAVAL PREVENTIVE MEDICINE CHAPTER 3 3-15-3-19 (2009), https://www.med.navy.mil/Portals/62/Documents/BUM

Additionally, in 2016, NOISH used statistical data and scientific research to support a recommended standard for occupational exposure to environmental heat.¹³⁹ In its 2018 petition to OSHA, Public Citizen relied on research and comparative analysis, including the aforementioned military guidelines and NIOSH's recommendations, to put forth its own set of recommendations for improving worker safety in response to heat-injury risks.¹⁴⁰ In fact, Representative Chu and seventy-eight House of Representative co-sponsors relied on those same recommendations and guidelines in the original HIFPA proposal.¹⁴¹ Therefore, all employers should consider starting with those recommendations and prepare to make industry-relevant adjustments. Below is a summary of some of those recommendations.

A. *Establish a Heat Index or Metabolic Heat-Stress Monitoring Program*

The heat index, sometimes referred to as the apparent temperature, is a calculation based on physical temperature and humidity levels to determine what the temperature actually feels like to the human body.¹⁴² Heat index temperatures as low as eighty degrees Fahrenheit are categorized by the National Weather Service (NWS) as sufficiently high for which caution should be exercised and some risks to the human body exist.¹⁴³ Anything above ninety degrees Fahrenheit is considered a heightened risk, under which generally healthy people are at elevated risks of injury including heat stroke, heat cramps, or heat exhaustion.¹⁴⁴ Conveniently, the NWS maintains an easily accessible online calculator,¹⁴⁵ and employers should create a routine for checking the heat index in both outdoor locations and indoor spaces with limited access to climate-control mechanisms.

The U.S. Navy, Marine Corps, Army, and Air Force all apply standards based on the wet bulb globe temperature (WBGT or environmental heat), a heat-stress measurement of direct sunlight that takes

ED/Directives/All%20Pubs/5010-3.pdf?ver=yohnSL5ixr0E8pzXCJLhCw%3d%3d; U.S. MARINE CORPS, MARADMIN 111/15, MARINE CORPS HEAT AND COLD STRESS INJURY PREVENTION PROGRAM (2015), <https://www.marines.mil/News/Messages/Messages-Display/Article/897018/marine-corps-heat-and-cold-stressinjury-prevention-program>; U.S. DEP'T OF THE ARMY & AIR FORCE, TB MED 507/AFPAM 48-152 (I), TECHNICAL BULLETIN, HEAT STRESS CONTROL AND HEAT CASUALTY MANAGEMENT (2003), https://armypubs.army.mil/epubs/DR_pubs/DR_a/pdf/web/tbmed507.pdf.

139. JACKLITSCH ET AL., *supra* note 24, at 96.

140. Petition from Pub. Citizen et al., *supra* note 20.

141. See Asuncion Valdivia Heat Illness and Fatality Prevention Act of 2019, H.R. 3668, 116th Cong. (2019).

142. Kristina Dahl, Rachel Licker, John T. Abatzoglou & Juan Declet-Barreto, *Increased Frequency of and Population Exposure to Extreme Heat Index Days in the United States During the 21st Century*, ENV'T RSCH. COMM'NS, 075002, at 4 (2019).

143. *What Is the Heat Index?*, *supra* note 15.

144. *Id.*

145. *Id.*

into account temperature, humidity, wind speed, sun angle, and cloud cover.¹⁴⁶ Each branch of the armed services has a set of guidelines for adapting workload relative to the WBGT,¹⁴⁷ and the Army and Air Force have both instituted hydration guidelines to accompany those adaptations.¹⁴⁸

NIOSH's research supports its recommendation that no worker should be exposed to combinations of metabolic heat¹⁴⁹ and environmental heat that exceed its recommended total heat load. Calculating heat load is fairly simple,¹⁵⁰ and NIOSH recommends that employers measure it hourly and adjust working conditions when the heat stress load exceeds the established thresholds.¹⁵¹

Knowing whether temperatures are putting employees at risk is the first step to promoting worker safety in temperature extremes. Implementing monitoring systems will ensure that an employer is aware of temperature-related trends and that the employer is able to plan ahead for worker safety. Employers should also establish guidelines for implementing workplace adaptations when the heat index is above the standard level for safe human function and/or the heat-load index is at a risk-bearing level. Some of those recommended adaptations include mandatory rest breaks; access to air conditioned or shaded areas to lower body temperature; access to water and electrolytes; and mandating personal protective equipment designed for cooling the body.¹⁵²

B. *Mandate New and Returning Employees Go Through an Acclimatization Period*

Research indicates that human beings are capable of physiological acclimatization, whereby the body gradually adapts to heat beyond the body's optimal range by changing how it manages bodily functions like water conservation, sweat, and heat transfer to the skin.¹⁵³ Experts

146. See DEP'T OF THE NAVY, *supra* note 138; U.S. MARINE CORPS, *supra* note 138; U.S. DEP'T OF THE ARMY & AIR FORCE, *supra* note 138; *WetBulb Globe Temperature*, NAT'L WEATHER SERV. <https://www.weather.gov/tsa/wbgt> (last visited Oct. 23, 2021) (defining WBGT).

147. DEP'T OF THE NAVY, *supra* note 138; U.S. MARINE CORPS, *supra* note 138; U.S. DEP'T OF THE ARMY & AIR FORCE, *supra* note 138.

148. U.S. DEP'T OF THE ARMY & AIR FORCE, *supra* note 138.

149. Metabolic heat is calculated by individual oxygen consumption. It can be estimated based on actual oxygen consumption or by detailed calculations. *Metabolic Heat*, SCI. DIRECT, <https://www.sciencedirect.com/topics/engineering/metabolic-heat> [<https://perma.cc/M52V-8YLE>] (last visited Feb. 10, 2020).

150. In fact, WBGT readers are publicly available for as little as \$200. See also *Heat Stress Index Calculation*, CLIMATE CHIP (July 16, 2020), <https://www.climatechip.org/heat-stress-index-calculation> [<https://perma.cc/ZY4V-SMT4>] (providing free online WBGT heat stress calculator).

151. JACKLITSCH ET AL., *supra* note 24, at 3.

152. Petition from Pub. Citizen et al., *supra* note 20, at 28–29.

153. Mazloumi et al., *supra* note 46, at 244.

believe that acclimatization contributes to the routine decrease in heat-related deaths from the start of the annual warm season to its end¹⁵⁴ and likely contributes to why the majority of employee heat-related illnesses occur within a person's first few days on a high-heat-exposure job.¹⁵⁵ This should prove particularly noteworthy for employers (and government regulators, for that matter) tasked with oversight of worksite conditions, because it suggests that an acclimatization period for new employees may be an effective strategy to advance employee safety in rising temperatures.

NIOSH recommends that employers implement an acclimatization period for all new employees.¹⁵⁶ Under that recommendation, workers should not work more than twenty percent of the typical working duration in the heat-exposed environment during the new employee's first few days on the job.¹⁵⁷ Each subsequent day, the employee should increase their workload in the heat-exposed location by no more than twenty percent of the usual duration.¹⁵⁸ Workers with prior experience and workers returning to work after an extended break exceeding one week should go through a similar acclimatization period, though the process may occur at a faster rate.¹⁵⁹ NIOSH further recommends that workers going through the acclimatization process be provided with opportunities to rest, cool off, hydrate, and restore electrolytes.¹⁶⁰ It is worth noting that the U.S. Navy, Marine Corps, Army, and Air Force all implement an acclimatization period and incorporate that period into their guidelines for the above-cited workload adaptations relative to WGBT.¹⁶¹ This serves as an example of how heat monitoring initiatives can inform worker safety in multiple workplace-safety categories. Furthermore, these adaptations do not need to be a one-size-fits-all approach.

154. *Id.*; see also Elizabeth G. Hanna & Peter W. Tait, *Limitations to Thermoregulation and Acclimatization Challenge Human Adaptation to Global Warming*, 12 INT'L J. ENV'T RSCH. & PUB. HEALTH 8034 (2015).

155. Barry-Jester, *supra* note 59; see also Sheila Arbury, Matthew Lindsley & Michael Hodgson, *A Critical Review of OSHA Heat Enforcement Cases: Lessons Learned*, 58 J. OCCUPATIONAL & ENV'T MED. 359, 359–63 (2016) (finding that of the eighty-four OSHA general duty clause citations issued for heat stress violations in 2012 and 2013, twenty-three cases involved worker fatalities. Seventy-four percent of those fatalities occurred within the person's first week on the job, and more than one-third occurred on the worker's first day of work).

156. JACKLITSCH ET AL., *supra* note 24, at 33–34. Acclimatization is also incorporated in the proposal for the Asuncion Valdivia Heat Illness and Fatality Prevention Act of 2019, H.R. 3668, 116th Cong. (2019). Public Citizen recommends a period of seven to fourteen days of acclimatization for new employees. Petition from Pub. Citizen et al., *supra* note 20, at 2.

157. JACKLITSCH ET AL., *supra* note 24, at 34.

158. *Id.*

159. *Id.*

160. *Id.* at 9–10, 34.

161. Petition from Pub. Citizen et al., *supra* note 20, at 21–22.

Importantly, whether the working environment is indoor or outdoor is immaterial to the acclimatization recommendations; what matters is that the environment is susceptible to heat-injury risks. Indoor environments with heightened heat-injury risks include, but certainly are not limited to, warehouses and factory floors operating with limited climate control.¹⁶² Acclimatization periods should be applied in those indoor conditions just as they would in outdoor workplaces.

C. Provide Access to Water and Electrolytes on the Job

Water and electrolyte balance are critical to human health, and accordingly to survival.¹⁶³ Heat stress can result in imbalances, which can inhibit a person's heat regulation, organ function, and overall cardiovascular function.¹⁶⁴ Therefore, employers should mitigate the risk of imbalance by following the U.S. military's lead¹⁶⁵ and instituting guidelines for water and electrolyte accessibility to employees. NIOSH recommends that employees should be encouraged to drink a cup of water every fifteen to twenty minutes if involved in moderate physical activity for up to two hours.¹⁶⁶ It further recommends that employees in such conditions for longer than two hours be provided water and electrolyte supplements.¹⁶⁷

D. Establish a Medical Monitoring Plan

Employers should require all new staff to go through a fitness-for-duty medical evaluation when the working conditions may expose an employee to heat-stress conditions that pose a risk to human safety. EEOC guidelines permit employers to make conditional job offers contingent on a medical screening without violating the ADA, provided that the screening is done for all entering employees in the same job category.¹⁶⁸ After a person begins the job, a medical examination is only

162. In 2011, OSHA opened an investigation into the working conditions at a Pennsylvania warehouse operated by Amazon.com after receiving a worker complaint that the facility's heat index had reached 102 degrees Fahrenheit and fifteen workers had collapsed on the job. Spencer Soper, *OSHA Investigates Complaints at Amazon's Pennsylvania Warehouse*, CHI. TRIB. (Sept. 23, 2011), <https://www.chicagotribune.com/business/ct-xpm-2011-09-23-ct-biz-0923-bf-amazon-heat-20110923-story.html> [<https://perma.cc/73KJ-4JQA>].

163. See generally Michael N. Sawka, *Body Fluid Responses and Hypohydration During Exercise-Heat Stress*, in HUMAN PERFORMANCE PHYSIOLOGY AND ENVIRONMENTAL MEDICINE AT TERRESTRIAL EXTREMES 227 (Kent B. Pandolf, Michael N. Sawka & Richard R. Gonzalez eds., 1988).

164. Scott J. Montain, William A. Latzka & Michael N. Sawka, *Fluid Replacement Strategies for Exercise in Hot Weather*, 164 J. MIL. MED. 502, 502 (1999).

165. See U.S. DEP'T OF THE ARMY & AIR FORCE, *supra* note 138; *Work/Rest Times and Fluid Replacement Guide*, DEF. HEALTH AGENCY MED. SURVEILLANCE MONTHLY REP., Apr. 2018, at 12.

166. JACKLITSCH ET AL., *supra* note 24, at 9–10.

167. *Id.*

168. U.S. EQUAL EMP. OPPORTUNITY COMM'N, *supra* note 88.

lawful in accordance with the ADA if it is job-related and consistent with business necessity.¹⁶⁹ Public Citizen recommends that employers institute medical screenings that include assessment of every incoming worker's risk of heat injury at the time of hire.¹⁷⁰ This option would comply with EEOC guidelines.¹⁷¹ Public Citizen goes one step further and recommends that such evaluations should follow annually for all workers, as well.¹⁷² This particular recommendation risks violating EEOC ADA guidelines, unless the employer can show that it is a business necessity.¹⁷³ At a minimum, employers should institute a medical screening at the time of hire for all employees whose job may expose him or her to heat stress in excess of the ninety degree Fahrenheit heat-index standard. Beyond that, employers should ensure that supervisors are vigilant about observing employee function and requiring all employees to complete fitness-for-duty exams as part of standard return to work procedures for employees who have been out for medical reasons. Consistency in the requirements and strict adherence to those guidelines are critical to ensuring that health- and safety-oriented efforts do not inadvertently impede on employee rights under the ADA.

E. Institute Mandatory Emergency Response Protocols

Valdivia's death may have been avoided had his employer implemented and followed a mandatory emergency response protocol. Alarmingly, witnesses reported that efforts to obtain emergency services after Valdavia fell ill proved futile when 911 callers were unable to provide the operator with the emergency's physical address.¹⁷⁴ Following his initial unresponsiveness, and after Valdivia started to show some signs of return to consciousness, witnesses indicate that a supervisor told Valdivia's son to take him home and all efforts to obtain emergency services on site ceased.¹⁷⁵ This missed opportunity may have been the difference between life and death for Valdivia and likely increased the employer's risk of liability.

To mitigate those risks, employers should implement and strictly enforce clear guidelines for active medical response to signs and

169. *Id.*

170. Petition from Pub. Citizen et al., *supra* note 20, at 30.

171. See EQUAL EMP. OPPORTUNITY COMM'N, *supra* note 88.

172. Petition from Pub. Citizen et al., *supra* note 20, at 14.

173. See EQUAL EMP. OPPORTUNITY COMM'N, *supra* note 88.

174. Arax, *supra* note 13.

175. While the employer asserts that any direction to take Valdivia home was merely a suggestion and not a directive, *id.*, that particular disagreement is immaterial to the reality that an employer requirement for emergency services to respond after Valdivia originally lost consciousness may have been a life-saving measure at best, and a liability mitigating guideline at least.

symptoms of heat stress.¹⁷⁶ Consistent with Public Citizen’s recommendations, which applied requirements set forth in the aforementioned California heat-stress law, employers must ensure that there are readily accessible means of emergency communication available at heat-injury-susceptible worksites.¹⁷⁷ Going one step further, details should be readily available to all on-site employees so that persons contacting emergency services are able to efficiently and effectively provide those services with the injured person’s physical location. Recognizing that mere access to communication tools is insufficient, as we saw with Valdivia’s incident, Public Citizen further suggests mandating procedures for immediate response to signs and symptoms of heat illness “in a manner commensurate with the severity of illness, including steps such as calling 911 for emergency medical care; moving the worker to a cool area (shaded or air-conditioned) and removing unnecessary clothing; cooling the worker quickly with cold water, ice bath, or wet cloths on skin; circulating air around the worker; and encouraging frequent sips of cool water.”¹⁷⁸ Each of these procedures promises to mitigate risks and improve chances of survival in emergency conditions.

F. Require New and Returning Staff Training on Heat Injury Prevention and Protocols

As observed in the Minnesota’s state law,¹⁷⁹ employers should require supervisors and employees in heat-prone worksites to undergo routine training on heat-injury prevention and mitigation techniques, heat-stress warning signs, and employer-established response procedures and protocols.¹⁸⁰ Public Citizen suggests that such trainings should be conducted by “qualified instructors.”¹⁸¹ Though Public Citizen’s petition does not define “qualified instructor,” employers should seek out persons with some level of expertise, and not merely rely on persons that have been through the same training at an earlier date. Effective training requires effective information sharing and instructional techniques. Similar training could have been the difference between life and death for Valdivia and many other workers who have suffered avoidable heat-stress injuries at work.

G. Whistleblower Protections

The Senate’s proposed HIFPA includes a whistleblower protection mandate.¹⁸² The statute would require OSHA to promulgate an

176. JACKLITSCH ET AL., *supra* note 24, at 48–51.

177. Petition from Pub. Citizen et al., *supra* note 20, at 31.

178. *Id.* (citing JACKLITSCH ET AL., *supra* note 24, at 48–51).

179. See MINN. STAT. § 5205.0110 (2019).

180. Petition from Pub. Citizen et al., *supra* note 20, at 31; see also Asuncion Valdivia Heat Illness and Fatality Prevention Act of 2019, H.R. 3668, § 2, 116th Cong. (2019).

181. Petition from Public Citizen et al., *supra* note 20, at 31–32.

182. S.B. 1068, § 3(b)(4).

official standard for heat-injury prevention, which must include a mandate that all covered employers adopt a policy “prohibiting any person (including an agent of the covered employer) from discriminating or retaliating against any covered employee for (i) exercising the rights of the covered employee under this Act; or (ii) reporting violations of the standard to a Federal, State, or local government.”¹⁸³ Whistleblower policies can encourage employees to engage in internal reporting mechanisms, thus enabling the employer to mitigate aforementioned liabilities by overcoming some of the factors that routinely inhibit employees from seeking critical health and safety resources and services. There is absolutely no reason that employers cannot institute their own internal whistleblower policy to promote enforcement of the employer’s heat stress guidelines. Public Citizen’s 2018 OSHA Petition set forth five criteria for a credible whistleblower protection policy:

Coverage that includes any employee who disclosed what he or she reasonably believes to be a violation of the heat stress standard; a “clear and convincing evidence” standard for employers to prove claims of nonretaliation; an option for employees to choose consensus-selection, shared-cost, independent binding arbitration; appropriate relief, including reinstatement with back pay; and a provision that rights and remedies under the whistleblower protection policy cannot be waived.¹⁸⁴

Accordingly, employers should consider implementing their own voluntary whistleblower protection programs to promote better communication about possible employer heat stress liability risks.

Conclusion

In time, OSHA may be mandated to promulgate formal heat-stress protection provisions.¹⁸⁵ In the meantime, employers should begin instituting some of the suggestions that some members of Congress are already working to codify.¹⁸⁶ The current state of employer responsibilities and liabilities are not likely to decrease, while the risks to employees—and subsequently to employers—will likely continue to rise alongside temperatures. Employers should stay ahead of the game by instituting policies and procedures that promote employee health and safety while simultaneously mitigating employer risks. Global

183. *Id.*

184. Petition from Pub. Citizen et al., *supra* note 20, at 32. The Petition further provides model language for recommended adoption by OSHA. This language could certainly be edited and ratified by private employers.

185. Former OSHA Directors Eula Bingham and David Michaels are among the proponents of Public Citizen’s 2018 Petition to OSHA for a Heat Standard. In support of the Petition, Michaels noted, “We learned from the Deepwater Horizon cleanup operation that even in high heat conditions, using the correct precautions can save lives.” Public Citizen Press Release, *supra* note 65.

186. *See* H.R. 3668, S.B. 1068.

temperatures are rising; occupational, climate-driven risks are rising; and proven heat injury mitigation techniques are at our fingertips. The time for businesses to self-regulate and enact their own climate-related heat injury mitigation processes and procedures is now. In the words of Greta Thunberg, “I want you to act as if the house was on fire—because it is.”¹⁸⁷

187. Greta Thunberg, Climate Activist, Special Address at the World Economic Forum (Jan. 24, 2019); James Workman, “*Our House Is on Fire.*” 16 Year-Old Greta Thunberg Wants Action, WORLD ECON. F. (Jan. 25, 2019), <https://www.weforum.org/agenda/2019/01/our-house-is-on-fire-16-year-old-greta-thunberg-speaks-truth-to-power> [<https://perma.cc/Z2CP-VKQK>].