Reporter Memo: An OSHA rule is Needed to Protect Workers from Heat Stress

On June 11, 2021 the Biden Administration listed a potential occupational heat stress protection rule in its biannual regulatory agenda. By announcing this first step in an exploratory process, OSHA has finally acknowledged the cries of workers, advocates, and occupational safety experts for a protective heat standard.

Occupational heat is one of the greatest hazards facing American workers. In spite of the risks, the Occupational Safety and Health Administration (OSHA) has never created a standard that sets out requirements for employers to protect workers from unsafe heat conditions. For years, advocates in Congress – alongside Public Citizen and more than 150 other consumer, labor, health, climate and environmental organizations representing millions of Americans – have been fighting to change that, and will be keeping up the pressure on OSHA until a heat standard has been finalized.

Heat is the leading weather-related killer in the United States.[1] While other weather events receive far more media coverage, extreme heat kills more people in this country annually than hurricanes, tornadoes and floods combined,[2] possibly as many as 1,300 people in the U.S. per year.[3] And it results in many times that number of serious injuries – in fact, each summer more than 65,000 people on average visit an emergency room in the U.S. for acute heat illness.[4]

Heat stress also has significant and damaging economic effects. It reduces productivity, increases the risk of accidents, and drives up medical expenses.[5] Heat-related injuries and illnesses increase workers' compensation costs and hospital-related expenses.[6] A recent study showed that California alone has approximately 20,000 workers' compensation claims for heat-related injuries every year.[7]

With accelerating global warming, the heat stress crisis is only getting worse. Twenty of the last 21 years were the hottest on record, and on our current greenhouse gas emissions path, the frequency and geographic range of extremely high heat index days is projected to increase drastically by midcentury. The average number of days per year with a heat index above 100°F

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[1] *Severe Weather Awareness – Heat Waves*, NATIONAL WEATHER SERVICE, https://bit.ly/2CQ3X6u.
[2] CENTERS FOR DISEASE CONTROL AND PREVENTION, CLIMATE CHANGE AND EXTREME HEAT: WHAT YOU CAN DO TO PREPARE (Oct. 2016), https://bit.ly/3wxh4kA.
[3] *Climate Change Health: Extreme Heat FAQs*, NRDC, https://on.nrdr.org/3fnGCuF.
[4] *Id.*
[5] CLIMATE CHANGE AND LABOUR: IMPACTS OF HEAT IN THE WORKPLACE, UNITED NATIONS DEVELOPMENT PROGRAMME, 27 (Apr. 28, 2016), http://bit.ly/3hQsnjQ.
[6] SIDNEY SHAPIRO & KATHERINE TRACY, PUBLIC LAW AND CLIMATE DISASTERS OCCUPATIONAL HEALTH AND SAFETY LAW (Rosemary Lyster et al. eds., 1st ed., Edward Elgar Pub, 2018), https://amzn.to/2QTBWxJ; U.S. GLOBAL CHANGE RESEARCH PROGRAM, FOURTH NATIONAL CLIMATE ASSESSMENT, VOLUME II (Nov. 2018), https://bit.ly/3vBPr9O.
[7] R. Jisung Park, Nora Pankratz & A. Patrick Behrer, *Temperature, Workplace Safety, and Labor Market Inequality*, IZA INSTITUTE OF LABOR ECONOMICS DP No. 14560 (July 2021), https://bit.ly/2V3WriI.

will more than double,[8] the number of days per year above 105°F will quadruple,[9] and more than one-third of the United States will experience heat conditions at least once per year that are so extreme they exceed the current National Weather Service heat index range – that is, they are literally off the charts.[10] By the end of the century nearly the entire southeastern U.S., from Virginia to the southern tip of Texas, will experience on average more than 85 "deadly heat" days per year – days when the combined heat and humidity overwhelm the body's ability to regulate temperature, even when at rest.[11]

Heat Stress Is Dangerous

According to the Bureau of Labor Statistics, from 1992 through 2019, exposure to excessive environmental heat killed 907 U.S. workers and seriously injured 79,584[12] – numbers that are in all likelihood vast underestimates due to underreporting.[13] The Government Accountability Office noted, employers are likely to underreport because they do not want to increase their workers' compensation costs or jeopardize their standing as safe workplaces for potential contracts.[14] In addition, some employers hire independent contractors to avoid reporting requirements.[15] And many employers have adopted incentive programs that reward workers when there are few recordable injuries and illnesses in the workplace.

For their part, many employees do not report injuries due to fear of retaliation, including the potential to lose their jobs. Moreover, the industries at highest risk of heat stress injuries and deaths are agriculture and construction. Both sectors rely heavily on undocumented and otherwise vulnerable workers, who are more likely to avoid reporting injuries themselves or have

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[8] KRISTINA DAHL, ERIKA SPANGER-SIEGFRIED, RACHEL LICKER, et al., UNION OF CONCERNED SCIENTISTS, KILLER HEAT IN THE UNITED STATES: CLIMATE CHOICES AND THE FUTURE OF DANGEROUSLY HOT DAYS 3 (July 2019), http://bit.ly/3yCPuo1.
[9] *Id.*
[10] *Id.*
[11] Camilo Mora, Benedicte Dousset, Iain Caldwell, et al., *Global risk of deadly heat*, NATURE CLIMATE CHANGE 7 7 501-506 (July 2017). For an interactive map of deadly heat projections, see http://bit.ly/3vpWGlm; Leahy, Steven, *Off-the-charts heat to affect millions in U.S. in coming decades*, NATIONAL GEOGRAPHIC (July 16, 2019), http://on.natgeo.com/3uqa9bB.
[12] *Occupational injuries/illnesses and fatal injuries profiles*, BUREAU OF LABOR STATISTICS [hereinafter BLS], https://bit.ly/3uoVP2Q.
[13] GOVERNMENT ACCOUNTABILITY OFFICE, WORKPLACE SAFETY AND HEALTH: ENHANCING OSHA'S RECORDS AUDIT PROCESS COULD IMPROVE THE ACCURACY OF WORKER INJURY AND ILLNESS DATA, (Oct. 2009), https://www.gao.gov/assets/gao-10-10.pdf; AFL-CIO, IMMIGRANT WORKERS AT RISK: THE URGENT NEED FOR IMPROVED WORKPLACE SAFETY AND HEALTH POLICIES AND PROGRAMS, (2005), http://bit.ly/2QUIBxl; R MINES, U.S. DEPARTMENT OF LABOR, AN EVALUATION OF THE GATHERING OF OCCUPATIONAL INJURY DATA BY THE NATIONAL AGRICULTURAL WORKERS SURVEY (NAWS) 30 (July 13, 2004); Larry Jackson & Howard Rosenberg, *Preventing heat-related illness among agricultural workers*, JOURNAL OF AGROMEDICINE 15 200-215 (2010); Jonathan Hofmann, Karen Snyder & Matthew Keifer, *A descriptive study of workers' compensation claims in Washington state orchards*, OCCUPATIONAL MEDICINE 56 251-257 (2006); Eric Hansen & Martin Donahoe, *Health issues of migrant and seasonal farmworkers*, JOURNAL OF HEALTH CARE FOR THE POOR AND UNDERSERVED 14 2 153-164 (May 2003).
[14] Government Accountability Office. Workplace safety and health: Enhancing OSHA's records audit process could improve the accuracy of worker injury and illness data. October 2009. http://www.gao.gov/new.items/d1010.pdf. Accessed June, 14, 2021.
[15] *Id.*

their injuries or deaths reported by their employers.[16] A recent study has demonstrated that non-U.S. citizens have a risk of heat-related mortality that is 3.4 times greater than that of U.S. citizens, and Hispanic and younger non-citizens are at even greater risk.[17]

Additionally, heat stress also diminishes performance and makes other accidents and injuries more likely,[18] giving rise to the possibility that heat stress is a significant factor in an untold number of fatalities or serious injuries that are not recorded as having anything to do with heat.

Together, all of these reasons for underreporting or undercounting virtually guarantee that the estimates of the BLS is a vast undercount. Indeed, millions of outdoor workers labor in extreme heat throughout the summer months..

Outdoor workers are not the only Americans who face occupational heat stress. Many indoor workers are at year-round risk from dangerously high temperatures, including those who labor in workplaces with heat-generating machinery or in enclosed workplaces without climate control or adequate ventilation. A few examples of high-risk workplaces are warehouses, factories, steel mills, electrical utilities, bakeries, commercial kitchens and laundries.[19]

Exposure to heat indexes above 90°F can be hazardous even for someone limiting their activities.[20] Moreover, this temperature threshold needs to be adjusted downward the more strenuously one works. For example, a typical unacclimatized farmworker doing heavy labor needs 15-minute rest breaks every hour at a heat index of 75°F in order to stave off heat stress. As the temperature rises, progressively longer breaks are needed.[21]

When a worker is pushed beyond a safe heat exposure, a range of dangerous illnesses may result.

- **Heat exhaustion** — Working in high temperatures can lead to headaches, nausea, dizziness, weakness, irritability, thirst, and elevated body temperature.[22]
- **Heat syncope** — Dizziness, light-headedness, or fainting with prolonged standing or sudden rising within a hot environment puts workers at great risk of injury.[23]

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[16] AFL-CIO. IMMIGRANT WORKERS AT RISK: THE URGENT NEED FOR IMPROVED WORKPLACE SAFETY AND HEALTH POLICIES AND PROGRAMS (2005), https://bit.ly/3xhh2Of.

[17] Taylor EV, Vaidyanathan A, Flanders D, et al. *Differences in heat-related mortality by citizenship status: United States, 2005–2014.* AM J PUBLIC HEALTH. *2018;108:S131–S136.*

[18] Brenda Jacklitsch, Jon Williams, Kristin Musolin, Aitor Coca, Jung-Hyun Kim & Nina Turner, NIOSH, NIOSH CRITERIA FOR A RECOMMENDED STANDARD: OCCUPATIONAL EXPOSURE TO HEAT AND HOT ENVIRONMENTS, 96 (2016) [hereinafter NIOSH 2016 CRITERIA RECOMMENDATIONS], http://bit.ly/3ulOWiL.

[19] DeRise, Terry, *How to Combat Indoor Heat Exposure*, EHS TODAY (May 14, 2020), http://bit.ly3fMNil7.

[20] *Hot and Cold: Extreme Temperature Safety*, HEALTHLINE (Jan. 10, 2017), http://bit.ly/3wI3yuH.

[21] NIOSH 2016 CRITERIA RECOMMENDATIONS.

[22] *Id.*

[23] *Heat Stress – Heat-Related Illness*, CENTERS FOR DISEASE CONTROL AND PREVENTION [hereinafter CDC], http://bit.ly/3fqShJi.

- **Rhabdomyolsis** — Prolonged physical exertion in hot weather, coupled with dehydration, can lead to muscle cramps and, in severe cases, a life-threatening, rapid breakdown and death of muscle tissue that can lead to acute kidney injury.[24]
- **Heat stroke** — If heat exhaustion becomes severe, then heat stroke, a life-threatening medical emergency, can occur. During a heat stroke, the body rapidly loses the ability to control its temperature and is no longer able to sweat. The body's temperature can rise to 106°F or higher within 10 to 15 minutes, and if immediate medical attention is not secured, death can come quickly.[25]

In addition to the acute threats of death and illness, these workers also likely face long-term health risks. Heat stress exacerbates existing health problems and vulnerabilities that shorten workers' lives such as asthma,[26] heart disease,[27] and susceptibility to environmental toxins (e.g. chemicals/pesticides).[28] And when coupled with dehydration, repetitive heat stress can cause depressed kidney function and chronic kidney disease.[29] In recent decades, an epidemic of chronic kidney disease has taken hold in Central America, becoming the second-leading cause of death among men in El Salvador, and researchers have identified chronic heat stress as the most likely culprit.[30] Such illnesses can be expected to occur more in the U.S. as temperatures rise. There is already some evidence that rates of kidney disease may be abnormally high among migrant farmworkers in California's Central Valley.[31]

Heat Stress Is a Racial Justice Issue

Workplace heat risks are a matter of profound racial injustice. Essential workers who experience the highest rates of heat illness are disproportionately Black and Brown. For example, while Hispanic/Latinx workers make up 17.6% of the entire workforce, they make up 65% of farm laborers, graders, and sorters.[32] Crop workers die from heat stress at a rate 20 times greater than the rest of the U.S. workforce.[33] More than 46% of laborers and freight, stock, and materials movers are Black and Hispanic/Latinx, as are more than 52% of laundry and dry cleaning

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[24] *Id.*
[25] *Id.*
[26] *Ask the Advocates: Does Heat Have an Impact on Asthma?*, ASTHMA.NET, http://bit.ly/3wIEwLF.
[27] *Protect Your Heart in the Heat*, AMERICAN HEART ASSOCIATION, http://bit.ly/2SCzkKQ.
[28] Christopher Gordon, Andrew Johnstone & Cenk Aydin, *Thermal Stress and Toxicity*, COMPREHENSIVE PHYSIOLOGY 4 3 995-1016 (July 2014), http://bit.ly/34pfvci.
[29] BRIAN CURWIN, NIOSH, CHRONIC KIDNEY DISEASE OF UNKNOWN ETIOLOGY: NIOSH PESTICIDE EXPOSURE STUDY IN EL SALVADOR SUGARCANE WORKERS (Sept 27, 2016), https://bit.ly/3bX3wHf.
[30] Carlos Manuel Orantes-Navarro, Raul Herrera-Valdés, Miguel Almaguer-López, et al., *Toward a comprehensive hypothesis of chronic interstitial nephritis in agricultural communities*, ADVANCES IN CHRONIC KIDNEY DISEASE 24 2 101-106 (Mar. 2017).
[31] Jason Glaser, Jay Lemery, Balaji Rajagopalan, et al., *Climate change and the emergent epidemic of CKD from heat stress in rural communities: the case for heat stress nephropathy*, CLINICAL JOURNAL OF THE AMERICAN SOCIETY OF NEPHROLOGY 11 8 1472-1483 (Aug. 8, 2016).
[32] *Farm Labor*, UNITED STATES DEPARTMENT OF AGRICULTURE ECONOMIC RESEARCH SERVICE (data from 2018), https://bit.ly/339Ks4F.
[33] *Heat Related Deaths Among Farmworkers, United States — 1996-2006*, CDC, https://bit.ly/3i9XgMw.

workers, 52% of cooks, and 58% of those working in warehouses and storage.[34] While Black Americans only make up 12.1% of the total workforce, they make up 25% of postal workers and 23% of UPS drivers.[35] They also make up nearly 28% of sanitation workers nationally and account for well over half the waste material collectors in many areas of the country.[36] Grounds maintenance workers are more than 44% Latinx, while roofers are more than 53% Latinx.[37] All of these are high risk jobs for exposure to heat.

Solutions

Heat Stress is Preventable

What's most frustrating about heat-related fatalities, injuries and illnesses is that they are all entirely preventable. The solutions are simple. Water, rest, and shade can make all the difference. Acclimatization – the gradual phasing up of exposure to hot conditions to allow the body to make adjustments to regulate heat more optimally – is critical to saving lives. Indeed, most heat fatalities occur in the first few days on the job, before workers have been able to adapt to high heat exposure.[38] Though, even acclimatized workers need protections like shade, water and rest.

Despite the simplicity and availability of such measures, most employers will not provide these protections voluntarily. A study of heat-related illness enforcement cases between 2011 and 2016 found that none of the employers had a heat acclimatization plan, none enforced mandatory rest breaks above recommended heat exposure limits, and only 10 percent had the ability to monitor environmental heat.[39]

OSHA Must Issue a Heat Standard

Evidence indicates that an extraordinarily high percentage of occupational heat stress fatalities occur in workplaces that lack basic heat protections.[40] Government rules are urgently necessary to solve this problem. While the Occupational Safety and Health Administration (OSHA) can cite companies for heat exposure violations under its General Duty Clause (GDC), this tool is

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[34] *Labor Force Statistics from the Current Population Survey*, BLS (2020), http://bit.ly/3bV3xvn; *Labor Force Statistics from the Current Population Survey*, BLS (2020), http://bit.ly/3hVdRal.
[35] *Labor Force Statistics from the Current Population Survey*, BLS (2020), http://bit.ly/3hVdRal; *Who We Are*, UPS (2015), https://bit.ly/3n0FKOo.
[36] *Labor Force Statistics from the Current Population Survey*, BLS (2020), https://bit.ly/3bV3xvn; Cole Rosengren and E.A. Crunden, *Risk and Race Concerns Fuel Ongoing Debate around Hazard Pay During Pandemic*, WASTE DIVE (July 9, 2020), https://bit.ly/2S3Iz39; Juliana Feliciano Reyes, *Trash is Piling Up but People Aren't Blaming Philly Sanitation Workers*, PHILADELPHIA INQUIRER (Aug. 4, 2020), https://bit.ly/3kXoV5o.
[37] *Labor Force Statistics from the Current Population Survey*, BLS (2020), https://bit.ly/3bV3xvn.
[38] OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, OSHA TECHNICAL MANUAL, SECTION III: CHAPTER 4 (Updated Sept. 15, 2017), http://bit.ly/3yG6zgM.
[39] Aaron Tustin, Dawn Cannon, Sheila Arbury, et al., *Risk factors for heat-related illness in U.S. workers: An OSHA case series*, JOURNAL OF OCCUPATIONAL AND ENVIRONMENTAL MEDICINES 60 8 383-389 (May 30, 2018), http://bit.ly/2RPoZuL.
[40] Sheila Arbury, Matthew Lindsley & Michael Hodgson, *A critical review of OSHA heat enforcement cases: Lessons learned*, JOURNAL OF OCCUPATIONAL AND ENVIRONMENTAL MEDICINES 58 4 359 361 (April 2016), http://bit.ly/3fLU8r2.

clearly inadequate to the challenge at hand, as demonstrated by the paltry 142 heat citations that OSHA issued under the GDC between 2013 and 2017.[41] During that same period, the Bureau of Labor Statistics recorded 160 heat fatalities and 15,940 cases of serious heat-related injury among American workers.[42] And the Occupational Safety and Health Review Commission, the administrative court that hears challenges to OSHA citations, has cast doubt on OSHA's ability to hold employers accountable for heat hazards in the absence of an OSHA heat standard.[43]

OSHA's unconscionable delay in promulgating a heat standard has not been for lack of information. The blueprint has long been available. Indeed, the National Institute for Occupational Safety and Health (NIOSH) – a component of the Centers for Disease Control and Prevention that provides research-based evidence to support OSHA's regulatory mission – issued its first Criteria for a Recommended Standard for heat exposure in 1972.[44] The guidance was updated with the latest science in 1986,[45] and most recently in 2016.[46]

Unable to rely on federal requirements, three states – California,[47] Washington,[48] and Minnesota[49] – along with the U.S. military[50] have issued heat protection standards of their own. And these standards work. Between 2013 and 2017, the period that in which OSHA issued only 142 GDC citations for heat exposure violations nationwide, California (which represents just one-eighth of the U.S. population) conducted 7,082 inspections that resulted in a citation for unsafe heat exposure practices.[51] This alarming disparity clearly shows why a specific, enforceable heat standard is urgently needed on a federal level.

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[41] *General Duty Standard search*, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, http://bit.ly/3fmLX5p.
[42] *Occupational injuries/illnesses and fatal injuries profiles*, BLS, https://bit.ly/3uoVP2Q.
[43] Secretary of Labor v. United States Postal Service, National Association of Letter Carriers (NALC) and National Rural Letter Carriers' Association (NRLCA) OSHRC Docket No. 16-1713; Secretary of Labor v. United States Postal Service, National Association of Letter Carriers (NALC) and National Rural Letter Carriers' Association (NRLCA) OSHRC Docket No. 16-1813; Secretary of Labor v. United States Postal Service, National Association of Letter Carriers (NALC) and National Rural Letter Carriers' Association (NRLCA) OSHRC Docket No. 16-1872; Secretary of Labor v. United States Postal Service, National Association of Letter Carriers (NALC) and National Rural Letter Carriers' Association (NRLCA) OSHRC Docket No. 17-0023; Secretary of Labor v. United States Postal Service, National Association of Letter Carriers (NALC) and National Rural Letter Carriers' Association (NRLCA) OSHRC Docket No. 17-0279.
[44] NIOSH, CRITERIA FOR A RECOMMENDED STANDARD: OCCUPATIONAL EXPOSURE TO HOT ENVIRONMENTS 72 (1972), http://bit.ly/3oTJ9zT.
[45] NIOSH, CRITERIA FOR A RECOMMENDED STANDARD: OCCUPATIONAL EXPOSURE TO HOT ENVIRONMENTS, REVISED CRITERIA 1986 (April 1986), http://bit.ly/2RRBBl7.
[46] NIOSH 2016 CRITERIA RECOMMENDATIONS.
[47] Cal/OSHA - Title 8, Section 3395, Heat Illness Prevention (2005), http://bit.ly/3p0xOy7.
[48] Washington State Legislature, General occupational health standards 296-62-095, OUTDOOR HEAT EXPOSURE (2008), http://bit.ly/3oSFAtT.
[49] Minnesota Administrative Rules, 5205.0110 Indoor ventilation and temperature in places of employment (2014), http://bit.ly/3vqqE8O.
[50] DEPARTMENT OF THE NAVY, MANUAL OF NAVAL PREVENTIVE MEDICINE, NAVMED P-5010-3 (2009); MARINE CORPS HEAT AND COLD STRESS INJURY PREVENTION PROGRAM, MARADMIN (March 9, 2015), http://bit.ly/34ziwap; DEPARTMENTS OF THE ARMY AND AIR FORCE, TECHNICAL BULLETIN: HEAT STRESS CONTROL AND HEAT CASUALTY MANAGEMENT, TB MED 507 / AFPAM 48-152 (March 7, 2003).
[51] Data obtained from Cal/OSHA on July 11, 2018. Per Cal/OSHA, the 2017 data may be incomplete.

Too many American workers have suffered from occupational heat stress, and in the absence of federal regulation, countless more face injury and death as climate change continues to make an already-urgent crisis even more dangerous. With so much at stake, the Biden administration's decision to include consideration of an occupational heat standard in the biannual regulatory agenda is welcome step in the right direction. Yet, while we wait for the rulemaking process to run its course, workers continue to toil in dangerous conditions.

With the NIOSH research and blueprint in place, OSHA should move with conviction and great haste to issue a heat standard. However, OSHA does not have a good track record for timely rulemaking. On average, OSHA takes close to eight years to complete the rulemaking process and issue a standard, ranging from 15 months to 19 years.[52] That's 50 percent longer than the Environmental Protection Agency and as much as five times longer than other federal agencies.[53] However, a Government Accountability Office report found that when statutory deadlines are put in place, that time is cut in half. [54]

In March of this year, Reps. Judy Chu, Raúl Grijalva, Bobby Scott and Alma Adams, along with Sens. Sherrod Brown, Alex Padilla and Catherine Cortez Masto reintroduced the Asunción Valdivia Heat Illness and Fatality Prevention Act (H.R. 2193/S.1086). The bill would require OSHA to issue a proposed rule within two years and final rule within 42 months. or an interim final standard within two years and two months.[55] Moreover, if OSHA fails to meet the 2-year deadline for a proposed rule, it would be required to issue an interim final rule within 60 days of the missed deadline.[56]

Public Citizen, along with 150 labor, health, and climate organizations representing millions of Americans support the Asuncíon Valdivia Heat Illness and Fatality Prevention Act. Congress must immediately pass the bill to ensure that OSHA will issue a final heat standard as soon as possible.

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[52] MULTIPLE CHALLENGES LENGTHEN OSHA'S STANDARD SETTING, GAO-12-602T at 13 (April 19, 2021), https://www.gao.gov/assets/gao-12-602t.pdf.
[53] Sandy Smith, *GAO Chief: We Don't Know Why OSHA Standards Take So Long*, EHS TODAY, (April 19, 2012), https://bit.ly/3iGSJVG.
[54] Time Takes Its Toll: Delays in Osha's Standard-Setting Process and the Impact on Worker Safety, before Senate Committee on Health, Education, Labor, and Pensions, S. Hearing 112-725, 8 (April 19, 2012), https://www.govinfo.gov/content/pkg/CHRG-112shrg73974/pdf/CHRG-112shrg73974.pdf.
[55] Asunción Valdivia Heat Illness and Fatality Prevention Act, S. 1086/H.R. 2193, 117th Cong. § 2 (2021).
[56] *Id.*