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As Nation Gets Hotter, Efforts To Prevent Worker Heat Deaths Accelerate, But Fixes Aren't As Simple As They Seem

By **Kim Krisberg** | Public Health Watch

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The record-shattering heat dome that settled across the Pacific Northwest in late June pushed temperatures in the typically temperate region well past the hottest days registered in the South. In Oregon, where temperatures soared to a high of 116 degrees, the heat wave has been tied to nearly [100](#) deaths so far.

Jesús de Leon, 62, was hauling cut trees from a residential lot in Portland during one of the hottest days, when temperatures climbed well above 110. De Leon has worked in the remodeling industry for the last 12 years and has dealt with fierce heat before. But the last days of June were “really ugly,” he said through an interpreter. “I felt like I was suffocating.” At one

point, he said, a co-worker threw up. The employer shut down work shortly after lunch.

De Leon is a member of the MLK Jr. Worker Center, a program of the Voz Workers' Rights Education Project that helps day laborers find trustworthy employers, and is aware of the risks posed by working in a heat wave. But he said he couldn't afford to give up several days of income and knew the scorching temperatures would mean fewer competitors looking for jobs.

"Not a lot of folks wanted to go to work so I took advantage of the work available," he said. "Even if it's just five hours, it makes a difference." Depending on the employer, de Leon said he usually earns between \$18 and \$20 an hour.

By late July, de Leon was facing down another blast of heat so intense it prompted the state to [declare](#) another emergency. This time, however, he'd be working under the protection of what labor and public health advocates agree is the best — but often missing — tool for preventing heat illness and death on the job: having enforceable, heat-specific rules on the books.

On July 8, following the work-related heat deaths of at least [two people](#), the Oregon Occupational Safety and Health Division adopted an emergency heat [rule](#) outlining steps employers must take once temperatures reach certain thresholds. The steps include providing regular, shaded rest periods and monitoring workers for signs of heat illness. Employers are also required to make sure all workers, including supervisors, are trained in heat safety before working on a day when the heat index is expected to hit 80 degrees. Before the emergency rule, employers had to provide water and rest breaks, but safety measures weren't matched to temperature.

When Oregon announced its emergency standard, it was already developing a permanent one. If that is adopted, Oregon will be only the fourth state — behind California, Washington and Minnesota— to have worker heat protections on the books.

There is no heat standard at the federal level, with the exception of the military, though advocates have lobbied the U.S. Occupational Safety and Health Administration to adopt one for years.

Rules are not a cure-all. Workplace health and safety enforcement in America is notoriously uneven. And worker centers would still be filled with stories of violators who ignore heat safety even if there were a universal standard. Still, rules matter.

One of the two Oregon workers who died from heat in June was 38-year-old Sebastian Francisco Perez, who was moving irrigation lines at Ernst Nursery and Farms in rural St. Paul as temperatures rose above 100 degrees. Co-workers realized he was missing, and he was found dead at the end of his shift. Ira Cuello-Martinez, climate policy associate at Pineros y Campesinos Unidos del Noroeste, Oregon's biggest farmworker union, said Perez's death could have been prevented if Oregon OSHA had heeded calls from advocates to issue an emergency heat rule before summer arrived.

The rule, issued in July, requires a buddy system or some other form of regular communication with people working alone once temperatures top 90 degrees. That might have saved Perez's life, Cuello-Martinez said.

"We understand that workers will put themselves in very risky situations, so we need to make it safer for [them]," he said,

adding, “People need this income so it’s a very difficult decision that workers have to make — to continue exposing oneself to unsafe work conditions.”

Growing Risks for Workers

More extreme heat seems inevitable, as the Intergovernmental Panel on Climate Change underscored in an alarming [report](#) in August. Outdoor workers in the U.S. could experience four times as many days with hazardous heat by mid-century without action to reduce greenhouse-gas emissions, according to new [research](#) from the Union of Concerned Scientists. Such workers already face a risk of heat-related death up to 35 times higher than that for the general population.

According to an [investigation](#) by NPR and Columbia Journalism Investigations, heat stress killed at least 384 workers in the U.S. in the last decade. NPR’s and CJI’s analysis of federal labor statistics showed the three-year average of worker heat deaths has doubled since the early 1990s. By all indications, however, that’s still an undercount – maybe a large one.

Injuries also may be underreported. In July, the Washington Center for Equitable Growth, a nonprofit research organization, released a [study](#) based on data from California’s worker compensation system. It found that on days with highs of 90 degrees, workplace injuries went up by 6% to 9%, compared to days that stayed in the 50- to 60-degree range. On days when temperatures hit 100 degrees or higher, injuries increased by up to 15%. Overall, researchers estimated that hotter temperatures caused about 20,000 injuries each year between 2001 and 2018 in California alone.

Brett Perkison, a physician and an assistant professor at the Southwest Center for Occupational and Environmental Health at the University of Texas Health Science Center School of Public Health in Houston, used to manage heat-stress prevention programs for a big oil and gas company. Heat stress, Perkison said, often presents very subtly, so people are unaware they're suffering potentially life-threatening symptoms. An employee working alone can become confused and lose the ability to find help in time. Even if they survive, people with severe heat-related injuries can suffer kidney failure and irreversible damage to their sweat glands, making it difficult for them to tolerate heat again.

There are basic tenets of heat-stress prevention, Perkison said, such as categorizing risk based on the heat index and activating appropriate interventions, such as buddy systems. The tactics are not highly technical — water, rest, shade, safety training — but managing all the moving parts can be.

“Oftentimes, what you see in occupational medicine is it’s not the big companies with lots of resources (associated with heat injuries), it’s contractors and subcontractors that do the hard manual jobs and have less resources and medical training,” Perkison said. The adoption of heat standards at the federal, state or local levels is a critical component of protecting such workers going forward, he said.

Body Sensors and Local Ordinances

Heat rules are [not infallible](#). In California, a recent [study](#) based on a unique set of physiological data from farmworkers found that even on farms compliant with state heat regulations,

some workers were still dehydrated at the end of their shifts and experienced core body temperatures of 38.5 degrees Celsius or higher, putting them at risk for heat-related illness. The findings were published in the Journal of Occupational and Environmental Medicine.

Study co-author Chelsea Eastman Langer, project coordinator at the Center for Health and the Environment at the University of California, Davis, said there is “no easy answer to this problem. It takes updated regulations, it takes enforcement, it takes training. But that only gets you so far because there’s also worker knowledge and behavior.”

In response to the research, Langer and colleagues created easy-to-access training and educational materials, some in Spanish, for farm supervisors and workers. The initial mailings went out in May to about 500 agencies throughout California, and Langer said demand surpassed expectations.

“Is there a clear difference before and after the (California) heat standard took effect?” Langer said. “The reporting of heat illness is pretty terrible and pretty problematic, so we don’t have a clear answer. But I have to believe that a heat standard did actually help.”

Technology could help make up for the imprecision of generalized rules. Last year, Garney Construction, a water and wastewater construction company based in Kansas City, Missouri, with offices around the country, partnered with Kenzen, a New York City-based tech startup, to pilot Kenzen’s wearable biometric sensor. The sensor, strapped around the upper arm, monitors indicators such as heart rate and core body temperature and alerts workers if they are showing signs of heat-related

illness. The devices also send a warning to supervisors, though details are kept hidden to protect workers' medical privacy.

Ryan Smith, eastern regional safety manager at Garney, said the sensors were tested last August and September on about 70 workers at 12 sites.

The sensors revealed some interesting data, Smith said. For example, workers at a Colorado site were overheating earlier in the day than expected, most likely because they were wearing more clothing in the cool mornings. The revelation prompted the employer to give workers a break specifically to remove the extra clothing. Heidi Lehmann, Kenzen's co-founder and chief commercial officer, said the software platform that supports the sensors starts at about \$40 per worker per month, with each sensor collecting tens of thousands of data points during an employee's shift.

By the end of this year, up to 5,000 of the sensors are expected to be in use worldwide, Lehmann said. In the meantime, Kenzen is compiling a trove of data related to heat-illness risk factors, which could provide new insights for prevention.

Research shows local rest-break ordinances also are promising tools. In 2010, after intense lobbying from local workers and advocates, the Austin, Texas, city council passed such an [ordinance](#) for construction workers, giving them the right to a 10-minute rest break every four hours. According to the city's code department, 237 complaints alleging violations of the ordinance have been lodged since it went into effect. All led to inspections, but no citations were issued, in part because rest-break violations are so hard to prove, said Emily Timm, co-founder and co-executive director of the Austin-based Workers

Defense Project, which led efforts to pass that city's ordinance and a similar one in Dallas. "It's definitely a challenge and not as concrete as proving workers haven't been paid," she said.

That doesn't mean the Austin rule is having no impact. In a 2018 [study](#) co-authored by Timm, researchers examined survey responses from hundreds of local construction workers and found they were 35% more likely to report getting a rest break than they were before the ordinance took effect.

Fifty-three [Texas workers](#) have died from heat exposure since 2010, nearly double the toll of the previous decade.

"At the end of the day, our interest is less that employers are getting fined and more that workers are getting rest breaks," Timm said. "It's about culture change. Workers know they have it, employers know it's expected."

But in a state like Texas, which doesn't require employers to carry workers' compensation insurance, local ordinances aren't invulnerable, either. In late August, during a special session of the Texas Legislature, conservative lawmakers passed a bill out of committee, having heard no public testimony, that would ban local worker protections such as rest breaks.

This, Timm said, is why a federal heat standard is needed, and why in the absence of one, local governments should have the right to pass their own worker-protection ordinances.

OSHA Pledges Action

A federal standard could be coming.

OSHA [has announced](#) a "request for information," the first step in what could be a long rule-making process, on heat-illness prevention. In its announcement, OSHA noted that California,

which was the first state to adopt a heat standard, conducted 50 times more inspections resulting in heat-related violations between 2013 and 2017 than OSHA did nationwide. (The absence of a federal standard forces the agency to issue citations using its so-called [general duty clause](#), which doesn't explicitly address heat. These citations, in turn, are often difficult to prove and easier for employers to challenge.)

OSHA also recently [announced](#) an enforcement initiative that, among other things, directs inspectors to prioritize investigations of heat-related complaints and intervene when they see workers performing strenuous tasks in high temperatures.

Public health experts have been pressing OSHA to adopt a heat standard for decades. In 2011, four labor and public-interest groups, including Public Citizen, petitioned the agency to issue a heat rule. David Michaels, OSHA's administrator from 2009 to 2017, denied that petition, arguing workers weren't dying from heat at a rate that justified a legal standard. Instead, OSHA launched educational campaigns for employers and offered free heat-awareness tools, like a bilingual phone app.

In 2018, Michaels changed course, joining Public Citizen and 131 other groups in a second petition for an OSHA heat standard.

While the prevention of heat illness and death is straightforward, Michaels said, some of the main elements, such as stopping work and resting, present a clear cost to industry. At the same time, it's hard to quantify the benefits of prevention, especially since OSHA is aware of only a small portion of workers whose deaths and injuries are linked to extreme heat. Legally,

OSHA doesn't need to do a cost-benefit analysis to move forward, but it makes for a politically difficult path.

Nonetheless, Michaels sees hope in the Biden administration, which has made [environmental justice](#) a priority.

“Given our understanding of the impact of heat on people of color and low-wage workers, I think it's very reasonable to move forward with a heat standard,” said Michaels, now a professor at the George Washington University Milken Institute School of Public Health. “That might mean slightly higher costs for home building or agricultural products, but it will save lives.”

Kim Krisberg is a contributing writer for [Public Health Watch](#), a nonprofit investigative news organization. Julia Shipley contributed to this story. Shipley is a reporting fellow at [Columbia Journalism Investigations](#), the investigative reporting unit at the Columbia Journalism School in New York.