

NIOSH Response to Public Review Comments

Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments

February 19, 2016

GENERAL COMMENTS		
Commenter	Comment	Response
Sammy Almashat	<p>See Public Citizen letter below.</p> <p>Public Citizen, a non-profit public interest group based in Washington, D.C, with more than 300,000 members and supporters, applauds the National Institute for Occupational Safety and Health (NIOSH) for completing the latest iteration of its criteria for a recommended heat standard.¹ Since its founding in 1971, Public Citizen’s Health Research Group has worked to protect the health and well-being of the nation’s workers, in part by advocating for robust federal safety and health standards. Over its 43-year existence, Public Citizen has petitioned the Occupational Safety and Health Administration (OSHA) for new or improved worker safety and health standards a total of 19 times, 13 of which have been granted.</p> <p>Heat stress continues to kill, injure workers at unprecedented levels</p> <p>NIOSH’s update to its 1986 heat stress criteria could not have come at a more urgent time for workers toiling in dangerously hot conditions all across the country, with worker deaths and injuries from heat exposure rising to unprecedented levels in recent years. From 1992 to 2012 (the most recent year for which federal data are available), at least 655 workers have died and 53,564 have been injured severely enough to result in at least one day away from work due to heat stress injuries.² The four-year period from 2009 to 2012 has been by far the worst in history for heat-induced worker deaths, and three of the four worst years for serious heat-related injuries have also fallen within this most recent time period.³ Pervasive under-reporting, especially among largely undocumented agricultural workers most</p>	<p>The letter was shared amongst NIOSH staff and forwarded to OSHA.</p>

	<p>affected by heat stress, means the true figures are much higher.</p> <p>Agricultural workers are by far the most severely affected group of workers, with an incidence of heat-related deaths 26 times the national rate. Construction workers are another group disproportionately impacted by heat stress.⁴ For farmworkers, backbreaking labor in sweltering conditions is a daily reality and one that puts them at unique risk for heat-related injury. Many farmworkers are paid by volume and not by hour, making many poor vegetable and fruit pickers reluctant to take rest breaks away from the heat. Large agricultural corporations know this and exploit a precariously employed workforce to its physical limit in dangerously high temperatures.⁵</p> <p>OSHA ignores evidence, fails to issue heat stress standard</p> <p>The importance of NIOSH’s research-based recommendations for occupational safety and health standards cannot be overstated. Unfortunately, in the case of heat stress, OSHA has met NIOSH’s recommendations with deafening silence and inaction.</p> <p>For more than 40 years now, OSHA has chosen not to issue a standard to hold employers accountable for exposing their workers to the life-threatening risks of severe heat exposure. In 1972, two years after the Occupational Safety and Health Act took effect, NIOSH undertook a comprehensive study on the effects of heat stress on workers, which culminated in a set of detailed criteria for a recommended occupational heat standard.⁶ The following year, OSHA responded to the report by appointing a committee, the Standards Advisory Committee on Heat Stress, to study the institute’s recommendations and advise OSHA on an appropriate heat standard. However, OSHA subsequently ignored the committee’s final recommended standard.⁷ Following OSHA’s failure to implement a heat standard based on NIOSH’s 1972 recommendations, NIOSH revised and reissued a set of updated recommendations for a heat standard in 1986.⁸ Again, OSHA refused to act on the institute’s</p>	
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recommendations. To this day, over 40 years after the first detailed criteria for a heat standard were issued by NIOSH, OSHA has failed to even begin considering a heat standard that, according to NIOSH, would “... prevent or greatly reduce the risk of adverse health effects to exposed workers ...”⁹ As a result, hundreds of workers have lost their lives, and tens of thousands more have been seriously injured due to entirely preventable heat-induced illnesses.

It was against this backdrop that in 2011, Public Citizen; Farmworker Justice; the United Electrical, Radio and Machine Workers of America; and Dr. Thomas Bernard, a leading occupational safety expert in heat stress and an external reviewer of the current NIOSH recommendations, petitioned OSHA to adopt a heat stress standard based largely on NIOSH’s 1986 criteria in addition to those published by the American Conference of Industrial Hygienists.¹⁰

Less than a year later, in June 2012, OSHA denied the petition, instead opting to continue to rely on employer self-policing with its educational and outreach program initiated the previous summer.¹¹ OSHA also suggested that its enforcement of dangerous occupational heat conditions under the General Duty Clause would suffice in place of a heat stress standard.

So how has it done in this regard?

OSHA inaction under the General Duty Clause

Since 1986, OSHA has conducted only 102 inspections resulting in a citation for unsafe heat exposure under the General Duty Clause, including 43 citations for violations associated with heat deaths and 59 citations for other heat-related violations.¹² That’s an average of only 3.6 citations per year for heat exposure, which has, by comparison, killed an average of 31 workers and seriously injured 2,551 more, every year since 1992.

On average, for every 20 workers dying of heat exposure every year, only one citation has been issued, meaning roughly 95% of employers are never held to account by OSHA when one of their workers dies from heat stroke. Of the approximately 5% of employers

with a heat-related death who have been issued a citation, the average fine was \$2,600. Furthermore, the rate of issuance of citations has not increased over time. There were more inspections resulting in a citation (55) in the 14 years from 1986 to 1999 than in the 14-year period since 2000 (47).

States move to protect workers

Against the backdrop of OSHA inaction, several states have moved ahead of the federal government and implemented their own heat stress standards. Two states, California and Washington, have promulgated standards to protect workers from excessive outdoor heat exposure, and one, Minnesota, has a standard for indoor heat exposure. (In 2003, the military instituted rigorous guidelines protecting soldiers and other employees from extreme outdoor heat conditions.)

As the first state in the nation to promulgate a heat stress standard for outdoor workers, California's experience is worth noting. California's standard requires employers to: (1) provide one quart of potable drinking water per worker per hour; (2) monitor, and provide shade for, all employees on particularly hot days; (3) provide rest breaks for employees upon request; and (4) train new employees and supervisors on heat-related illness and preventive measures.¹³

Although the standard is not perfect, it is miles ahead of what OSHA currently requires under the few federal regulations that address heat stress even peripherally.¹⁴ Furthermore, California's enforcement record belies OSHA's claim that it is doing all it can under the General Duty Clause to hold employers accountable.

In the first six years that California's standard was in force (the last half of 2005 through the first half of 2011), this single state conducted **138 times more inspections** resulting in a citation for unsafe heat exposure practices than OSHA conducted, under the General Duty Clause, across all 29 states under its jurisdiction. In fact, California conducted more of these inspections (195) in the first half of 2011 alone than OSHA has completed in more

than 28 years of enforcement under the General Duty Clause (102 since 1986). This alarming disparity clearly shows why a specific, enforceable heat standard — of the sort recommended by NIOSH — is urgently needed on a federal level.

Conclusion: OSHA must finally adopt NIOSH recommendations

In closing, it is abundantly clear that OSHA has been failing to adequately protect workers from heat stress since its inception. Over forty years have now passed since NIOSH issued its first criteria recommendations, which have never been adopted as a standard by the federal agency tasked with protecting the nation’s workers from injury and death on the job.

We urge NIOSH to do all it can to pressure OSHA to start the rulemaking process for a comprehensive heat stress standard in line with NIOSH’s recommendations as soon as possible. Worsening climate change is poised to transform the crisis of worker heat-related deaths and injuries into an epidemic in the coming decades. Unless OSHA finally holds employers accountable for willfully putting their workers’ lives on the line on a daily basis, millions of workers will continue to be put at risk.

1 National Institute for Occupational Safety and Health. Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments. Revised Criteria 2013.

<http://www.cdc.gov/niosh/docket/review/docket266/pdfs/heatHotEnvironmentsCritDoc-ExtRev-120913.pdf>. Accessed February 24, 2014.

2 U.S. Department of Labor. Bureau of Labor Statistics. Occupational Injuries/Illnesses and Fatal Injuries Profiles.

<http://data.bls.gov/gqt/InitialPage>. Accessed February 12, 2014.

3 Ibid.

4 Public Citizen. Petition for a Heat Standard. Sept. 1, 2011.

<http://www.citizen.org/documents/Petition-for-a-heat-standard-090111.pdf>. Accessed February 11, 2014.

Unless otherwise indicated, the data and factual statements presented in these comments are based on information contained within and cited

	<p>in the 2011 Public Citizen petition for a heat standard.</p> <p>5 See e.g. Human Rights Watch. Fields of Peril: Child Labor in US Agriculture. May 2010. http://www.hrw.org/sites/default/files/reports/crd0510webwcover_1.pdf. Accessed February 24, 2014.</p> <p>6 Department of Health and Human Services (NIOSH) Publication No. 72-10269. Criteria for a Recommended Standard: Occupational Exposure to Hot Environments. 1972. http://www.cdc.gov/niosh/docs/1970/72-10269.html. Accessed February 11, 2014.</p> <p>7 National Institute for Occupational Safety and Health Publication No. 86-113. Basis for the Recommended Standard: Occupational Exposure to Hot Environments (Revised Criteria 1986), p. 89-90. http://www.cdc.gov/niosh/docs/86-113/86-113.pdf. Accessed February 11, 2014.</p> <p>8 Ibid.</p> <p>9 Ibid, p. 1.</p> <p>10 Public Citizen. Petition for a Heat Standard. Sept. 1, 2011. http://www.citizen.org/documents/Petition-for-a-heat-standard-090111.pdf. Accessed February 11, 2014.</p> <p>11 Public Citizen. Statement: With Hundreds of Workers Dying, OSHA’s Denial of Petition for a Heat Stress Standard Is Shortsighted. July 3, 2012. http://www.citizen.org/hrg2042. Accessed February 24, 2014.</p> <p>12 Data on General Duty Clause inspections are on file with Public Citizen and based on a search of OSHA’s General Duty Standard search engine. http://www.osha.gov/pls/imis/generalsearch.html. Last accessed February 25, 2014.</p> <p>13 California Code of Regulations. Title 8, section 3395, Heat Illness Prevention. http://www.dir.ca.gov/title8/3395.html. Accessed February 11, 2014.</p> <p>14 See e.g. a discussion of the Field Sanitation Standard in: Public Citizen. Petition for a Heat Standard. Sept. 1, 2011. http://www.citizen.org/documents/Petition-for-a-heat-standard-090111.pdf. Accessed February 11, 2014.</p>	
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CHAPTER 3. HEAT BALANCE AND HEAT EXCHANGE

Commenter	Comment	Response
J. P. Purswell	The 1986 Criteria Document omitted consideration of conductive heat loss in the "Heat Balance equation" on page 18 of the document. Since cooling vests with slots for ice packs are readily commercially available	Often, the heat balance equation does not include the element of conduction because a person would have to have a significant percent of their body surface in contact with a cooler surface before a large amount of

	<p>now, it would helpful if the equation could be corrected to include conductive heat loss as a means of dissipating heat.</p>	<p>heat exchange would occur. Moreover, in a criteria document that deals with heat stress, conduction may occur with skin exposure to a hot surface which is often prevented by wearing PPE. As far as the use of ice vests, conduction is an issue but one with a negative consequence. The surface temperature of ice vests against the skin is likely to cause cutaneous vasoconstriction leading to a reduction of blood flow to the periphery for heat exchange. So, while the skin thermal receptors register a cold experience, the core body temperature is rising because of the reduction of warm blood circulating to the skin for heat exchange with the ice. This is a major drawback with using ice vests to reduce physiological heat strain. That said, some people working in a hot environment may lean up against wall or lie down on a floor whose surfaces are cooler than the skin. In this case, conduction may be an effective means of heat transfer from the skin. The conductive term "K" is defined in the current version of the document and section 3.2.4 Conduction was added.</p>
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