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Transcript of **Day 10**

Monday, June 30, 2025

OSHA Heat Injury and Illness Prevention Hearing

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OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)

OSHA'S INFORMAL RULEMAKING HEARING FOR HEAT INJURY AND ILLNESS PREVENTION IN OUTDOOR AND INDOOR WORK SETTINGS

Day 10 of 12

Monday, June 30, 2025

9:30 a.m.

PARTICIPANTS

PRESIDING:

WILLOW EATON FORT, Administrative Law Judge, Office of Administrative Law Judges, United States Department of Labor

OSHA PANEL:

ADRIANA LOPEZ-MENENDEZ
AMY WANGDAHL
BRENDA FINTER
DEANA HOLMES
JASON HAMMER
JOO-HYUNG SHIN
RYAN TREMAIN
TIFFANY DEFOE
VARUN PATEL
ZOE PETROPOULOS

OFFICE OF THE SOLICITOR OF LABOR:

LINDA WILES
JENNIFER LEVIN

PARTICIPANTS, IN ORDER OF TESTIMONY:

ALSO PRESENT:
MARIAM CARLON, ABT Global

P R O C E E D I N G S

JUDGE FORT: This is an informal public hearing on the Occupational Safety and Health Administration's proposed rule for heat illness and injury prevention in outdoor and indoor work settings. The Notice of Proposed Rulemaking was published first to the Federal Register on August 30th, 2024, in volume 89 of the Federal Register, beginning at page 70,698.

I'm Willow Eaton Fort, administrative law judge for the United States Department of Labor, and I'm presiding over today's hearing. The purpose of this hearing is to receive from interested parties oral testimony, as well as other information pertinent to the proposed rule. After the hearing, the post-hearing comment -- and after the post-hearing comment period has closed, OSHA will review the entire record in determining the content of the final rule.

My role as a presiding judge is limited to conducting this hearing to assure that a complete and accurate record is made and that all interested parties receive a fair hearing and have an opportunity to submit their information. The hearing schedule and

OSHA procedures governing this hearing are available on the website for this hearing, which is www.osha.gov/heat-exposure/rulemaking. The documents were sent to people and organizations who timely filed a Notice of Intent to Appear at this hearing.

A few words about the nature of the hearing. Despite the informal nature of the hearing, it is governed by rules, both OSHA rules and rules governing hearings, which are found at 29 CFR, Part 1911, and the hearing procedures issued specific to this rulemaking. The rules are meant to ensure that everyone has a fair opportunity to speak and express an opinion about the proposed rule. To that end, they also allow me to hold witnesses to allotted times, to limit undue repetition or excessive argument, and generally keep the hearing on schedule.

Any written comments you have submitted to the docket are already part of the record of this rulemaking. In the rare cases -- or in the rare case where witnesses wish to provide any other documents that have not already been entered into the docket, they should provide them by email to

oshaevents_dsg@dol.gov before the witness begins their testimony so they can be entered as exhibits in the record.

Because all pre-submitted documents are already part of the record, your oral testimony should concentrate on presenting the highlights of your written comments or clarifying your written submission. Hearing participants may also submit additional evidence or statements for a period of 90 days from the end of the hearing, which will be September 30th, 2025. At that point, the record for this rulemaking will close.

Today, after each speaker or panel of speakers completes giving oral testimony, OSHA representatives will have an opportunity to ask questions of the speaker or the panel. When OSHA has finished asking questions, there will be an opportunity, as time permits, for persons who filed a timely Notice of Intention to Appear to question the witness or the panel. Participants may only direct questions to witnesses with whom they have no organizational affiliation.

And this is the process I intend to follow. After OSHA has finished asking questions of a witness or panel, I'll ask the participants who wish to ask questions of the witness to identify themselves by pressing the raise-hand button in Webex, or by pressing star three on their telephones for those who have called in.

Based on the hearing schedule and the number of participants who wish to ask questions, I'll determine the order in which participants will question the particular witness or panel and any time restrictions on that questioning. If there are more questions than we have time for today, it may be possible to ask additional questions after the conclusion of the final witness's testimony. Further, if witnesses are unable to answer a question during today's hearing or would like to expand on the answers provided, they're welcome to use the post-hearing comment period to submit such information.

I would also like to remind you that this proceeding is being recorded and transcribed by a court reporter. To ensure that the reporter is able to

provide an accurate record of all the testimony, questions, and responses, please try to remember to provide verbal responses to all questions. The court reporter may have a hard time seeing you if you nod or shake your head in response.

In addition, please remember to identify yourself before beginning your testimony and before asking or answering a question. Don't worry, I know many participants are not accustomed to doing these things. I'll help you as you go along.

The transcript of the hearing will be uploaded to the hearing docket on regulations.gov approximately two weeks following the hearing.

Now, unless there are any further announcements or other housekeeping matters, I believe we can proceed with public testimony. The expected speaking order is currently displayed on the screen. Our contractor will introduce each speaker in turn and promote them to be panelists. When you're called to testify, please state your name and your affiliation for the record. And please speak slowly and clearly so our court reporter can record the proceedings accurately.

MS. CARLON: Thank you.

The first speaker is Laura Myers. Please state your name and affiliation for the record.

DR. MYERS: Hello? Can you hear me?

JUDGE FORT: We can.

DR. MYERS: Excellent. My name is Dr. Laura Myers. I'm a pulmonary critical care physician, and I'm speaking today on behalf of the American Thoracic Society.

JUDGE FORT: You may begin.

DR. MYERS: Thank you very much for the opportunity to speak today. By way of introduction, the American Thoracic Society is a leading medical organization dedicated to respiratory health, and we're comprised of over 16,000 physicians, research scientists, and nurses and other allied health care professionals.

And today we're going to be talking about the mandatory federal standard specific to heat-related injury and illness. And I want to go over some of the public health concerns related to heat, specifically as they pertain to outdoor and indoor workers.

So first, as many of us know, there's increases in the frequency, duration, and intensity of heat waves as defined by persistent periods of ambient temperature. And this can have very adverse health consequences on indoor and outdoor workers. Heat, in my view, is an ever growing public health threat.

On a personal note, we see patients coming into the hospitals and the intensive care units, specifically where I work, with adverse effects of heat, specifically conditions such as severe hyponatremia, that's very low sodium levels; rhabdomyolysis, which is breakdown of muscles; as well as kidney failure, which is the malfunctioning of the kidneys. And these medical problems are a direct result of heat. And there are potentially ways in which we could protect especially vulnerable populations who are both outdoor and indoor workers disproportionately exposed to heat.

I want to go over a couple of facts and research studies related to respiratory and cardiovascular health. Specifically, increased temperatures affect the respiratory system. We know, based on Medicare

data from about a decade until 2018, that across counties in the United States, increases in daily temperature is associated with same-day emergency hospitalizations for respiratory disease. The most common are asthma or COPD, which is chronic obstructive pulmonary disease, commonly known as emphysema.

And we also know there are significant cardiovascular effects. So when temperatures increase, we know that there's more likely to be events such as ischemic heart disease commonly known as heart attacks, as well as blood pressure that goes up, hypertension, and abnormal heart rhythms. And this can be very dangerous for people, especially if they have underlying heart or lung conditions.

As -- by way of emphasis, I will say that agricultural workers, folks who work outside, are at even more increased risk for exertional heat-related illness. We know from one study in particular that heat-related mortality is actually 35 times higher than those who work in other industries. And actually, construction workers for -- have increased risk of accidents on days that are hotter compared to days that

are less hot. And so these people are at significantly increased risk because of their environmental exposures.

I also want to stress that it's not always as simple as turning on a fan or drinking more water. Patients with comorbid conditions might not be able adapt to the heat quickly enough in order to compensate. And so folks with underlying kidney disease, liver disease, heart or respiratory disease are on medications that blunt their response to be able to respond to the increased environmental temperatures and thus need specific protections.

Lastly, I will say that many workers at highest risk for heat-related illness are vulnerable populations. So these are people with low socioeconomic status who truly depend on the hourly wage and may continue to work even if they feel symptoms or become dangerously hyperthermic. These folks need to be protected.

And so for all of these reasons, in view of the public health consequences of heat-related illness, we're in support of a federal heat standard for both

indoor and outdoor workers. We thank you very much for the opportunity to speak today.

JUDGE FORT: Thank you, Speaker Myers.

Does anyone from OSHA have questions?

MR. TREMAIN: Thank you, Your Honor. This is Ryan Tremain with OSHA Standards and Guidance, and we do have a few questions. I can ask those. Again, this is Ryan Tremain.

We were interested in your support of the requirement of the Heat Injury and Illness Prevention program to be made available in languages that each employee understands. And you further suggested that translations be made available when needed. And we were curious whether the American Thoracic Society is aware of any employers who are currently providing those kind of verbal translations for heat-safety materials?

DR. MYERS: That's a good question. As part of our written comments that we submitted in the past year, we did highly advocate for these materials to be translated into languages other than English. I don't know off the top of my head what organizations have

already done that. I would imagine some actually in the State of California, and I'm happy to look into that and -- and send that information directly into you folks.

MR. TREMAIN: Okay. Great. I guess, if you -- if you, you know, come across any information on estimates of labor costs or any other costs associated with the translation, that would be great as well.

Thank you very much. That concludes OSHA's questions.

JUDGE FORT: Thank you. Does anyone from the Solicitor of Labor have questions?

MS. LEVIN: I have no questions, but I would like to thank the witnesses very much for her time and testimony.

JUDGE FORT: Are there any other participants with questions?

MS. CARLON: There are none, Your Honor.

JUDGE FORT: All right. Wonderful. Thank you for your testimony. Thank you for your participation.

Who do we have next?

MS. CARLON: Our next speaker is Dr. Mark

Mitchell. Please state your name and affiliation for the record.

DR. MITCHELL: Good morning. I'm Dr. Mark Mitchell. I am with the National Medical Association.

JUDGE FORT: Thank you, Speaker Mitchell. You may begin.

DR. MITCHELL: Okay. The National Medical Association is the oldest and largest organization of African-American physicians, and we represent the interest of our members and their patients, who tend to be lower-income patients and also are more likely to be people of color.

As you know, heat kills more people than any other weather-related condition in the United States. And heat is increasing across the world, but it increases at an irregular rate. It increases faster. It's been increasing faster in northern states, particularly Alaska, as well as northeastern states.

Now -- and of course outdoor workers are at some of the highest risk of injury and death from heat. This is especially the low-wage workers, such as agricultural workers and construction workers.

However, workers and others can become acclimated to the heat if they're given enough time. The most dangerous part of the year is early spring in the mid-latitude states and the northern states; that's where most people will die. States along the area of Kansas City, Saint Louis, and Baltimore, Washington, D.C., Philadelphia, are most likely to die, followed by the northern cities like Chicago and -- and others -- Minneapolis. So those places particularly need to make sure that the outdoor workers as well as athletes are acclimated. That is that they -- at the beginning of the season, if there's an unusual heat wave like there has been for the last week or two here in the Northeast, that there should be reduced hours during that period of time during -- you know, for maybe a couple of weeks at the beginning and you know, during a heat wave.

But once they're acclimated -- even during that time and once they're acclimated, there should be accommodations made for workers who are out in the heat. We recommend regular breaks, perhaps every two hours for a break and where they have access to water,

especially ice water, if it's -- if it's available, and that they have the ability to carry that water back to their workplace so that they can drink water all through the day.

Then secondly, they should have access to bathrooms. We hear particularly that -- that agricultural workers may not drink water because they don't want to stop to go to the bathroom and that they'll have more injury to their kidneys because of that.

We -- they should also have access to shade or air-conditioning. We know, for example, that heat affects our cumulative. That particularly when the low temperatures at night do not get below 70 degrees, and that if people don't have air-conditioning -- don't have access to air-conditioning at all, that the death rates increase, particularly if -- if the heat wave is more than three -- is three -- three days or longer in length. So we know that if people have access to air-conditioning two hours per day, that -- that that will decrease the amount of death and the cumulative risk of heat.

So those are some of the recommendations that the National Medical Association makes and will be happy to answer any questions.

JUDGE FORT: Thank you, Speaker Mitchell.

Does anyone from OSHA have questions?

MR. TREMAIN: Thank you, Your Honor.

And thank you, Dr. Mitchell, for your testimony. Yes, OSHA does have a question. This is Ryan Tremain with OSHA, by the way. Our question comes from Zoe Petropoulos, who is joining virtually.

MS. PETROPOULOS: Hi. Thank you for your testimony. This is Zoe Petropoulos with the Directorate of Standards and Guidance.

So we heard from various medical professionals during the hearing last week that they believe that heat-related injuries and illnesses among workers go underreported in official administrative and surveillance data sets for various reasons. Do you agree with this? Why or why not?

DR. MITCHELL: Yes. That's what the evidence is, that it's underreported, again, because of workers, particularly agricultural workers, are scared to lose

their jobs. And so they do what they can -- you know, they're in a -- in a relationship where they are at a disadvantage. And so if they report their illnesses, then they're more likely to lose their -- their jobs. And so -- so that's why I believe that it's underreported, and I think that there is some evidence of that.

MS. PETROPOULOS: Thank you so much.

And that's it for me.

MR. TREMAIN: And I believe that's all for OSHA's questions as well.

DR. MITCHELL: Thank you for the opportunity to testify.

JUDGE FORT: There may be someone from Solicitor of Labor. Does anyone from the Solicitor of Labor have questions?

MS. LEVIN: Jennifer Levin for the Solicitor of Labor, I have no questions for the witness. But thank you very much for your time and testimony.

JUDGE FORT: Are there any participants with questions?

MS. CARLON: There are none, Your Honor.

JUDGE FORT: All right. Wonderful.

Thank you, Speaker Mitchell.

DR. MITCHELL: Thank you.

JUDGE FORT: Who do we have next?

MS. CARLON: The next speaker is Peggy Ann Berry.

Please state your name and affiliation for the record.

MS. BERRY: Hello. My name is Peggy Ann Berry, and I am the Executive Director and President of the Ohio Association of Occupational Health Nurses.

JUDGE FORT: Welcome, Speaker Berry. You may begin.

MS. BERRY: Okay. As occupational health and environmental nurses, we applaud OSHA's work on this standard. The proposed rule thoroughly outlines all the dangers associated with heat exposure in an increasingly hot planet.

I have one comment associated with page 77 -- okay -- 7000 -- I'm sorry -- 70,748, third column on five, acclamation (sic). There is and will be, as we in the Midwest have experienced the last six days, heat-dome days where there will be increasingly unsafe

heat to work in in spite of acclimate -- acclimate -- I can't talk today -- acclimate -- in spite of working up to working in the heat. Rest breaks outside in shaded areas may not be enough, as discussed in the study on page 70,750 in the last paragraph.

I would strongly urge that if it is not in the standard, that there should be an upper limit where no employees should be working in that type of environment, and that's just on anecdotal experience as an occupational health nurse.

Thank you. That's my only comment.

JUDGE FORT: Thank you, Speaker Berry.

Are there any questions from OSHA?

MR. TREMAIN: This is Ryan Tremain with OSHA Standards and Guidance. We do have one question from Zoe Petropoulos.

MS. PETROPOULOS: Hi. This is Zoe Petropoulos with the Directorate of Standards and Guidance. Thank you for your testimony. I have the same question for you that I just asked Dr. Mitchell. We heard from various medical professionals last week during the hearing that they believe heat-related injuries and

illnesses among workers go underreported in official administrative and surveillance data sets for various reasons. Do you agree with this? Why or why not?

MS. BERRY: I do agree with it. I worked 13 years in a heavy freight -- air freight and trucking company, and there were times where an employee would come in, which I would feel could be heat exposure, that just drank water, sat in a cool area, and then went back to work without a willingness to report it as an injury or illness. So yes, I agree with that statement.

MS. PETROPOULOS: Thank you. And that's it for me.

MR. TREMAIN: And that also concludes OSHA's questions.

JUDGE FORT: Thank you. Does anyone from the Solicitor of Labor have questions?

MS. LEVIN: Jennifer Levin from the Solicitor of Labor, Your Honor. I have no questions for the witness.

But thank you very much for your time and your testimony. Thank you.

MS. BERRY: Thank you.

JUDGE FORT: Is there any participants with questions?

MS. CARLON: There are none, Your Honor.

JUDGE FORT: Wonderful.

Thank you, Speaker Berry.

MS. CARLON: The next speaker is Michael Luther. Unfortunately, we do not see your name in the attendee list. If you have joined under a different name, please click the raise hand button to indicate your presence. And if you have called in, please press star three from your phone to raise your hand.

All right. Moving on to the next speaker. The next speaker is Charlotte Brody. As well, unfortunately, we do not see your name in the attendee list. If you have joined under a different name, please use the raise-hand button to indicate your presence. And if you have called in, please press star three to raise -- from your phone -- excuse me -- to raise your hand.

Our next speaker is Elle Stephens.

Please state your name and affiliation for the record.

MS. STEPHENS: Good morning. My name is Elle Stephens, and I'm an attorney at the Environmental Defense Fund, or EDF. Thank you for the opportunity to participate in this hearing.

JUDGE FORT: Welcome, Speaker Stephens. You may begin.

MS. STEPHENS: EDF supports OSHA's proposed Workplace Heat Injury and Illness Prevention Rule as a critical step in OSHA's efforts to protect workers from occupational exposure to hazardous heat.

As OSHA acknowledges in its proposed rule, heat is the leading cause of death among all weather-related phenomena in the United States. Occupational heat exposure can pose particular risks versus heat and other settings because of characteristics of work environments and tasks, and because the control that employers exercise may limit workers ability to take steps to protect themselves.

As dangerous heat conditions occur with increasing frequency and severity across the United States, it is critical that OSHA finalize and enforce these workplace protections. Establishing robust standards would

substantially reduce the risk posed to workers by occupational exposure to hazardous heat.

OSHA's proposed rule aligns with the agency's congressional mandate to address occupational risk by issuing safety or health standards that are reasonably necessary or appropriate to provide safe or healthful employment. Since exposure to hazardous heat in the workplace poses a significant, well-documented, and growing risk of serious injury and illness to workers in both indoor and outdoor settings, OSHA's proposed rule firmly falls within the agency's statutory authority and responsibility.

A key element of the proposed rule is its establishment of heat index and wet bulb temperature thresholds that trigger different levels of protections. OSHA utilizes rigorous experimental and observational data to conclude that heat index triggers of 80 degrees Fahrenheit and 90 degrees Fahrenheit are highly sensitive indicators of heat injury and illness risk, and therefore duly protective of workers.

OSHA's wet bulb based triggers have a firm basis in NIOSH exposure limits that are themselves grounded

in decades of empirical data. Both of these types of triggers are also in line with current and proposed triggers in state heat standards. Based on this evidence, as well as additional scientific studies, we believe OSHA's temperature and wet bulb triggers are appropriate and necessary.

Further, the proposed rule asks whether OSHA should consider an additional trigger specific to heat waves. We believe OSHA should, given the significant amount of data revealing that workers are more susceptible to heat-related injuries during heat waves. The proposed rule correctly recognizes that a combination of factors can interact to further heighten the risk of occupational heat-related health effects for some groups of people. For example, the proposed rule states that excessive heat exacerbates existing health conditions like asthma, diabetes, kidney failure, and heart disease. Additionally, the proposed rule recognizes that some groups may be more likely to experience adverse health effects from heat, such as pregnant workers.

OSHA also notes in its proposed rule that the new

heat standards would have a positive impact on underserved populations, for example, low income and Hispanic workers, by providing workplace protections from extreme temperatures that have a disproportionate impact on occupations held by individuals from underserved communities.

OSHA's consideration of the intersection of multiple risk factors is grounded in scientific evidence on contributing factors to heat-related illness and injury. We firmly support OSHA's efforts to ensure that its standard effectively protects all workers in the United States from heat-related illness and injury.

Currently, seven states have promulgated permanent or temporary workplace heat standards. These states include Maryland, Colorado, Minnesota, Oregon, Washington, California, and most recently, Nevada. The proposed rule wisely takes into consideration the then-existing state level heat standards and their health outcomes, implementation strategies, and other relevant data.

We encourage OSHA to consider further consultation

with officials, worker representatives, and other stakeholders from states with heat standards on best practice and lessons learned as state standards continue to develop.

In conclusion, we strongly support OSHA's proposed rule and look forward to sharing further recommendations and information, including responses to any questions in our post-hearing written comments. Thank you for your time and for your attention to these important issues.

JUDGE FORT: Thank you, Speaker Stevens.

Are there any questions from OSHA?

MR. TREMAIN: This is Ryan Tremain with OSHA Standards and Guidance. Yes, we do have a few questions. Thank you.

Thank you for your testimony, Ms. Stephens. You just indicated that OSHA should consider some of the existing state standards, and I wonder if you had any specific states in mind, or if you could expand on any changes that OSHA should make to its current proposal based on existing state standards. And that's something you could consider and put in post-hearing

comments. Or if you have anything off the top of your head here, that's great as well.

MS. STEPHENS: Yeah. Thank you for that question. I think the state that comes to mind first is Minnesota because they have varying levels of strenuousness indicated within their state-level rule. OSHA's proposed rule does an excellent job of mirroring some of the standards in state-level standards already. So we really appreciate that about the rule, and we will address that question more deeply in post-hearing written comments. Thank you very much.

MR. TREMAIN: Sure. And then I guess specifically, we've heard a lot of testimony and comments throughout these hearings regarding OSHA's recently promulgated -- or sorry -- Nevada OSHA's recently promulgated heat standard. Do you think that OSHA should adopt a standard similar to Nevada's? I guess that's something you could consider in the context of your other post-hearing comments. And we would just be interested to hear how you regard Nevada's rule. It does not have any heat triggers, but requires employers to -- to conduct a job hazard

analysis.

MS. STEPHENS: Yeah. Thank you for that question. And we'll address that in post-hearing comments.

MR. TREMAIN: Thank you very much.

Our next question comes from Varun Patel.

MR. PATEL: Thank you for being here. This is from Varun Patel from OSHA. So in your written comment, you recommended OSHA to amend the proposal to include requirements for employers to assess employees' medical preconditions in order to development -- or anything. And do you have any data on the cost of economic feasibility or anything related to cost that including medical surveillance provisions? If you have any data that you can provide us in your post-hearing comments or anything, that will be helpful.

MS. STEPHENS: Yeah. Thank you for that question. I would direct attention to OSHA's previously promulgated rule on formaldehyde, which does actually require an analysis of the medical -- medical issues that some employees might have. So I -- we don't have any data -- I don't have any data to share with you at the moment, but we can address that in post-hearing

comments. Thank you very much.

MR. PATEL: Thank you. And if you can include that, how do you envision employers often getting that data and using that, that would be also helpful for us to consider.

MS. STEPHENS: Excellent. Thank you.

MR. TREMAIN: And our final questions come from Zoe Petropoulos, who's joining virtually.

MS. PETROPOULOS: Hey, this is Zoe Petropoulos for the Directorate of Standards and Guidance. In your organization's written comments -- and I heard you briefly mention this in your testimony -- you recommended additional protections during heat waves. And in your written comment, you provided a definition from the World Meteorological Organization that you said OSHA should consider. I have some follow-up questions regarding this suggestion. So based on the definition from the WMO, does your organization recommend that OSHA allow employers to determine heat waves, or do you -- does your organization suggest that employers should be using a standardized source or standardized formula?

MS. STEPHENS: Yeah. Thank you for that question. So EDF recommends that there is a definition, generally, for heat waves within the proposed rule. And that could be from the World Meteorological Association -- or Organization. So I think, you know, just having a definition would be helpful.

But then the proposed rule already requires employers to consider additional factors, and I think one of those factors was heat waves if you know that that could potentially increase exposure to heat. So I think that there could be some specificity that an employer might -- might be able to use there. But in general, I think just including a definition of a heat wave would be helpful.

MS. PETROPOULOS: Got it. And if your organization has any additional recommendations on any changes that you would propose relating to heat waves based on your comments, we would welcome those in post-hearing comments, specifically if you're aware of any definitions that could be easily used by most employers for determining heat waves, particularly those employers who may not have an industrial hygienist on

staff.

MS. STEPHENS: Okay. Excellent. Thank you very much.

MS. PETROPOULOS: Thank you for your testimony. That's it for me.

MR. TREMAIN: And that -- and that also concludes OSHA's questions.

JUDGE FORT: Wonderful. Does the Solicitor of Labor have any questions.

MS. LEVIN: Jennifer Levin for the Solicitor of Labor. I have no questions for the witness. Thank you very much for your time and your testimony.

JUDGE FORT: Okay. Great. Are there any participants with questions?

MS. CARLON: There are not, Your Honor.

JUDGE FORT: Thank you, Speaker Stephens.

MS. CARLON: The next speaker is Juanita Constible. Please state your name and affiliation for the record.

MS. CONSTIBLE: Good morning. My name is Juanita Constible, and I work at the Natural Resources Defense Council, otherwise known as NRDC. I have been tracking

and analyzing workplace heat standards across the U.S. since 2018, and as part of that effort, have interacted directly with heat-vulnerable workers and their representatives across many different states and many different industries.

I really appreciate the opportunity to speak with you today, especially since many of you have been patiently listening to testimony for weeks now and have probably been hearing a lot of the same thing.

I actually started my career as a wildlife biologist, spending long, hot days working outside, only to return to a hot tent at night. I received all sorts of safety training, including how to operate a chainsaw, how to put an all-terrain vehicle on the back of a pickup truck, and what to do in the case of a bear encounter. I did not, however, get any training on extreme heat, even though that was the hazard I faced most often on the job.

One unusually hot day, I push myself past the point I should have because I didn't know any better, and my workplace culture valued toughing things out. I became so dehydrated and so overheated that I got lost

on the trails that I had walked dozens of times before. I truly don't know how long I wandered out there, but I'm confident that I would not be here today if I hadn't finally and very much accidentally stumbled across my air-conditioned truck.

My story had a happy ending, but to many other untrained workers have not been so lucky. Consider, for example, Gabriel Infante, who died from heatstroke when he was just 24 after working on a construction site. The site supervisor mistook Infante's delirium for illicit drug use and initially instructed a colleague to call the police instead of 911. Federal OSHA cited that employer under the general duty clause, but later formally settled the case, and as part of that settlement, the employer agreed to, quote, "train its managers on heat stress recognition."

You've already heard the last couple of weeks a lot about Ronald Silver, II. He collapsed last summer on a resident's front step after collecting trash all day in extreme heat and was pronounced dead at the hospital an hour later. Silver had exhibited classic heat-related symptoms for hours, which his colleagues

on the solid waste truck might have known if their employer had provided any sort of training to nonsupervisory employees, or I might add, if their supervisor had attended the most recent heat-training session that had been offered to managers.

Now, lots of workers do get heat training, of course, but the outcomes of that training can vary. For instance, one small study in Nebraska farms found that workers had a good basic understanding of how to identify early heat-related symptoms and how to do general heat-related first aid. However, they were far less certain about how to identify and respond to a true heat emergency, which is incredibly concerning given that just 30 minutes of inaction can mean the difference between life and death for a worker with exertional heat stroke. In fact, critical gaps like these are exactly why OSHA needs to stay the course that it charted with its proposed heat standard, which mostly strikes a good balance between specificity and flexibility for employers.

But let me be really, really clear about something. Training alone is not enough to keep

workers safe from extreme heat. I've heard suggestions during these hearings that OSHA could issue a training-only standard without requiring any of the rest of the hierarchy of controls. There is a major problem with this idea, as illustrated by a recent survey of more than 3,500 service sector workers. The workers reported that heat safety training programs where they existed often emphasized individual responsibility, but at the same time, the culture, the norms, and the operating procedures of their employers frequently made it impossible for workers to adopt the measures they had been trained on. Knowledge and skills won't save you if you don't have ready access to clean drinking water, if your employer fails again and again to fix the broken air-conditioner, and if your employer is finally going to make good on their threat to report you or your family to immigration officials.

The bottom line is this; workers need heat training, but a training-only standard would amount to a collective shrug about the systematic and persistent threats that many workers face on the job, and it would also ignore the established science of starting at the

top of the hierarchy of controls where possible.

Thank you for the opportunity to testify, and I'm happy to answer your questions, and will include citations in my post-hearing comments.

JUDGE FORT: Thank you, Speaker Constible.

Do we have questions from OSHA?

MR. TREMAIN: Thank you, Your Honor. This is Ryan Tremain with OSHA Standards and Guidance. And yes, we do have a few questions from my colleague Adriana Lopez.

MS. LOPEZ: Good morning. Adriana Lopez, OSHA Directorate of Standards and Guidance.

Ms. Constible, thank you for your testimony. In a comment submitted on December 2023 from the NRDC and 33 undersigned organizations, the Oregon Standard -- Heat Standard is cited as a useful model for paid cooldown breaks. First, after roughly three years of implementation of the Oregon Standard, are there any further adjustments to the standard that NRDC would recommend lending greater flexibility to accommodate employer concerns about loss of production during the breaks?

MS. CONSTIBLE: I don't have an answer for that question right now, but I will certainly get back to you in my post-hearing comments.

MS. LOPEZ: Great. Thank you very much. And then, are there any other structures for paid breaks that NRDC would recommend, especially for work sites such as tall towers and bridge construction projects, where scheduled breaks may not be practicable -- practicable.

MS. CONSTIBLE: It does seem that for those particular situations that we'll have to look at potentially using protective gear that helps cool the body down. But having said that, there are -- well, I'm going to stop there. I'm not an expert in those work situations. I will do some additional investigation and get back to you.

MS. LOPEZ: Sure. Thank you very much. Those are all my questions.

MS. CONSTIBLE: Uh-huh.

MR. TREMAIN: Yes. Thanks again, Ms. Constible. And that is all of OSHA's questions.

JUDGE FORT: Wonderful. Are there any questions

from the Solicitor of Labor?

MS. LEVIN: Jennifer Levin for the Solicitor of Labor. I have no questions for this witness, but thank -- thank her for her time and testimony.

JUDGE FORT: Are there any participants with questions?

MS. CARLON: There are none, Your Honor.

JUDGE FORT: Okay. Thank you.

Thank you, Speaker Constible.

MS. CONSTIBLE: Thank you, Your Honor.

MS. CARLON: The next speaker is Jerry Rivers. Unfortunately, we do not see your name in the attendee list. If you have joined under a different name, please click the raise hand button to indicate your presence. And if you have called in, please press star three from your phone to raise your hand.

All right. At this point in time, we're going to go ahead and recall the speaking order on the top of this slide.

The next speaker will be Charlotte Brody.

Please state your name and affiliation for the record.

MS. BRODY: Hello?

JUDGE FORT: Yes.

MS. BRODY: Can you hear me now?

JUDGE FORT: We can.

MS. BRODY: Great. Thank you. My name is Charlotte Brody, and I serve as Vice President of Occupational and Environmental Health for the BlueGreen Alliance, a national coalition of labor unions and environmental organizations that work together to fight climate change, protect the health of people in the environment, stand against economic and racial inequality, and create and maintain good paying union jobs in communities across the country. My training is as a registered nurse.

As a nurse, I know the importance of ordering the right prescription for the right health problem. This proposed rule is so critically important because we know the correct prescription to prevent heat stress in American workers. A good plan, a cool, shaded place to rest, cool liquids, acclimatization, training, a communication system, emergency procedures, and no fear of retaliation. The proposed rule is prescriptive and

could be a little bit more prescriptive because we know the prescription needed to save lives.

In what's left of my five minutes, I want to address some of the critiques of the OSHA proposal. Let me start with a suggestion that I've heard that the rule should be rewritten to acknowledge regional differences in the quality of hot days. I would argue that the proposed rule's use of wet bulb and heat indexes address that concern.

Second, the argument that workers in warmer climates are all used to more hot days, and so the rules should have higher triggers for those regions. But why just single out that regional difference? CDC tells us that in the Southeast, there's a higher prevalence of both diabetes and cardiovascular disease, two conditions that increase the risk of heat dress -- heat stress. Should the heat trigger be lower in those states in recognition of the higher incidence of those diseases?

Third, that industries that haven't experienced heat fatalities or serious injuries should be exempted from the rule. The OSHA proposal recognizes the

dramatic undercounting of heat-related illnesses that would prevent such industry exemptions.

Let me add that, with the exception of emergency personnel who are actively responding to an emergency, the BlueGreen Alliance is opposed to any other exemptions, including exempting the Americans that OSHA now excludes as sedentary workers. We would suggest that each employer create a health, illness, and injury prevention plan with their employees and their unions and determine which jobs under which conditions need heat protections.

We further propose that OSHA add language so employees and their representatives are clearly included in all aspects of the HIIPP, and not just in development and implementation. It is essential that there is continuous engagement with workers and their representatives, because heat-related risks may evolve, and there should be regular opportunities for feedback.

Fourth, the critique that implementing this rule would be too expensive. That criticism ignores the math on the savings that will come from protecting workers from heat. OSHA has provided the sound

estimate that for every $100 in company revenue, this fully implemented rule will cost $0.04, and that the savings will not only cover that $0.04 per $100, but also save an extra $1.4 billion every year.

We recognize that adding another rule can feel like too much of a burden for many employers, but here, OSHA can help, providing model plans and training materials in many languages, including the plans from the companies that are arguing that they don't need a rule because they already fully protect their workers, will make implementation easier. With more examples and templates, we would hope that more employers would see that the rule provides a generally flexible outline that can be used to prepare their heat illness and injury prevention plan with plenty of room to tailor that plan for their individual workplace.

My first involvement with an OSHA rule was the Cotton Dust Standard. I've understood since the late 1970s that the creation of a new OSHA standard is a really difficult undertaking, and that was just for one industry. So let me end by thanking all of the OSHA staff who worked on this proposal. Thank you.

JUDGE FORT: Thank you, Speaker Brody.

Are there any questions from OSHA?

MR. TREMAIN: Thank you, Your Honor. This is Ryan Tremain with OSHA Standards and Guidance, and we do have some questions we'd like to ask.

Thank you, Ms. Brody. In your written comments in particular, you stressed the importance of addressing air-conditioning system failures in the proposed standard and a need for immediate corrective actions. I was wondering if you could provide any detailed recommendations on specific protocols or timelines that should be established for addressing air-conditioning malfunctions. And of course, that could be anything you've got today or in follow-up comments.

MS. BRODY: We'll put that in our follow-up comments. It's a really good question. You know, that -- that -- I -- and -- and for us, it -- it clearly links to the definition of sedentary, that -- a worker that may sit at a desk comfortably at 70 degrees is not going to be comfortable at 95 degrees when the air-conditioning goes out and - and as happened at OSHA recently. So thinking about a heat plan, needing to

think about the failure of the hierarchy of controls and what's going to happen at that workplace and who's going to make the decision, would be important inclusions in any heat illness and injury prevention plan.

MR. TREMAIN: Okay. Thank you. And the next question kind of gets a little bit to acclimatization. And was curious what types of part-time schedules are most common for the workers that you represent? And do these kind of varied part-time schedules complicate the implementation of acclimatization protocols?

MS. BRODY: That's a very general question about -- with a lot of specifics that would need to be implemented. And again, I think that's where writing a heat plan in a workplace with a framework that OSHA provides makes the most sense. That temp work often changes depending on how many orders or how busy a place is. That -- that -- and so thinking that the -- the people in that workplace have the best sense of what actually is going on and how to take the -- a strong OSHA framework and apply it, would address the question of part-time -- how you acclimatize people in

a part-time situation, I -- I think, really needs to be specific to a workplace with general guidance from OSHA.

MR. TREMAIN: Great. Thank you so much, again.

Our next question comes from Deana Holmes.

MS. HOLMES: Deana Holmes, with OSHA's Directorate of Standards and Guidance.

Ms. Brody, in your written comments, you recommend that OSHA require documenting paid and unpaid rest breaks, as well as heat injuries and illnesses. Can you further explain why OSHA should require documenting -- documenting this information?

In addition, you recommend that this information be retained for two years. And if you can provide how you derive that -- that duration, that would be great as possible -- as -- as -- as well. Excuse me. Thank you.

MS. BRODY: We'll provide more answer in our post-hearing comments. But just in general, you know, we count what matters, and the importance of heat breaks -- of rest breaks is essential to protecting workers from heat and finding a simple but consistent

way of recording those breaks, we think, makes the standard stronger.

MR. TREMAIN: Thank you. And finally, our colleague, Zoe Petropoulos, joins online with a question.

MS. PETROPOULOS: Hey. This is Zoe Petropoulos with the Directorate of Standards and Guidance. So in your written comment, as well as your testimony, and I believe your answer to Ryan just now, you recommended and you discussed indoor sedentary workers, and you recommend in your comment that they should be included in the scope of the rule whenever the initial heat trigger is met or exceeded. And I'm -- my question is, if you are aware of any data on heat-related injuries and illnesses among indoor sedentary workers, and if you are, if you're able to share those with us in your post-hearing comments.

MS. BRODY: You know, the data we have on actual injuries and illnesses to heat -- because of heat is so skimpy, and -- but -- but I know from talking with teachers, for example, who are part of AFT, one of our member unions, they really questioned the definition of

sedentary and had some interesting data about how much of a day a kindergarten teacher is actually on her feet. And the -- I think that -- we'll -- we'll certainly look again in the 90 days after the hearing, but the -- the data is mostly circumstantial rather than an elegant, properly done study.

MS. PETROPOULOS: Thank you. And a follow-up question based on your response there. If there are any recommendations that your organization would make to OSHA on the definition of sedentary, we would also welcome those now or in post-hearing comments.

MS. BRODY: We'll do that.

MS. PETROPOULOS: Thank you.

And that's it for me, Ryan.

MR. TREMAIN: Yes. Thanks, again. This is Ryan Tremain with OSHA, and that concludes our questions.

JUDGE FORT: Are there any questions from the Solicitor of Labor?

MS. LEVIN: Jennifer Levin from the Solicitor of Labor. No questions for this witness. But thank you very much for your time and your testimony.

JUDGE FORT: Great. Are there any questions from

participants?

MS. CARLON: There are none, Your Honor.

JUDGE FORT: Thank you, Speaker Brody.

MS. BRODY: You're welcome.

MS. CARLON: At this time, we have come to the end of the speaking order, so we're just going to recall anyone that was marked as absent prior.

So the first person that we will recall is Michael Luther. If you have joined under a different name, please use the raise-hand button to acknowledge your presence, or use star three on your phone if you have called in.

And the next speaker we are recalling is Jerry Rivers. If you have joined under another name, please use the raise-hand button to indicate your presence. And if you have called in, please use star three to raise your hand.

Your Honor, it looks like they are both still absent.

JUDGE FORT: Okay. And they would be the last two witnesses for the morning session, correct?

MS. CARLON: Correct.

JUDGE FORT: All right. Is there any suggestion? Should we go ahead and break and then reconvene a little earlier than anticipated to see if they have joined, or do we just break and then restart at the lunch? Suggestions are welcome.

MR. TREMAIN: (AUDIO MALFUNCTION) break until 11.

MS. LEVIN: The suggestion from OSHA -- this is Jennifer Levin from the Solicitor's Office. The suggestion from OSHA is to take a break now until the afternoon session at 1 o'clock. And the absent -- the absent speakers are free to -- to submit a post-hearing comment if they have anything further that they would like to inform OSHA.

JUDGE FORT: Perfect. Okay. Unless there are any dissenting opinions, we will follow that. Any dissenting opinions? Okay. We will then break for lunch. Lunch is until 1 p.m. Eastern, as I understand it, so we will reconvene at 1 p.m. Eastern time.

MS. LEVIN: Thank you.

MR. TREMAIN: Thank you.

JUDGE FORT: All right. Thank you all.

(Lunch break.)

MS. CARLON: This is Mariam Carlon from ABT Global, OSHA's contractor. It is 1:00 Eastern Time and we are now rejoining OSHA's informal rulemaking hearing for Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings. Before we begin, we'd like to go over some logistics for today's public hearing.

As a reminder, all attendees are muted automatically. All Webex attendees can access closed captioning and translated captioning by clicking on the CC icon in the lower left-hand corner of the application. You can individually select your caption language if translation is required. I will now share the same slide in Spanish. All YouTube viewers will have access to auto translation the day after the hearing.

All Webex attendees delivering testimony will have access to a countdown timer to ensure allotted time is adhered to. We will launch the timer for you, and it should be seen on the right-hand side of your screen. If you do not see this app launched in your Webex window, please follow the instructions on the screen to manually launch this app.

If you are speaking today, you will receive a notification on your screen that you are being promoted to the panelist group a few minutes before it is your time to provide testimony. Once promoted to the panelist role, you will be able to unmute and turn on your camera. We ask that you do not unmute or turn on your camera until your name has been called, and you have been asked to start your testimony. Speakers connected by telephone should unmute their phones when called to testify.

If you submitted a presentation in advance, we will share the file and advance the slides. Please cue us verbally by saying next slide when you need us to advance.

Dependent on timing, there may be opportunity to ask question of -- excuse me -- to ask questions of other speakers giving testimony. You may press the raise hand button at the bottom of the Webex application to indicate that you have a question. If there is time, you will be called on by name and promoted to the panelist group to unmute and ask your question.

If you are having any technical difficulties, please send an email with your name and phone number to public_hearing@abtassoc.com. Now we will continue with our public testimony. The expected speaking order is currently displayed on the screen. I will continue introducing each speaker in turn. Please speak slowly and clearly so our court reporter can record these proceedings accurately. The first speaker will be Margaret Morrissey-Basler. Please state your name and affiliation for the record.

DR. MORRISSEY-BASLER: Margaret Morrissey Basler.

JUDGE FORT: Good afternoon.

DR. MORRISSEY-BASLER: Hello, everyone. My name is Maggie or Margaret Morrissey Basler, and I'm an assistant professor at Providence College, but also a researcher at the Korey Stringer Institute, housed at University of Connecticut, and the former chair of the Thermal Stress Working Group for AIHA. I will be supporting the statement from AIHA and the Korey Stringer Institute.

For those of you unaware of both organizations, the Korey Stringer Institute is again housed at

University of Connecticut, mission is to prevent sudden death in the physically active, and has dedicated a lot of time and resources on its effort to protect workers, especially from heat-related illness. AIHA, its mission is to empower and advance those who apply scientific knowledge to protect all workers and their communities from occupational hazards, and the vision being that there is a world where all workers and their communities are healthy and safe. And they do this by -- this aim, by achievement, through identification, development, improvement, and promotion of excellence in this field.

AIHA is dedicated to reducing heat and cold-related injuries in the occupational space and, as previously mentioned, has created a thermal stress working group to create resources and initiatives to support this. My statement today will focus on the following eight sections in the proposed standard. First being identification of a heat hazard, initial training recommendations, heat acclimatization recommendations, hydration recommendations, body -- excuse me -- buddy system recommendations, body cooling

recommendations, emergency procedures recommendations, and lastly, employee input and involvement recommendations. I will go section by section and provide recommendations for revision, clarity, or expansion of these sections.

First is identifying heat hazards. And we -- I -- in my statement, I recommend the use of wet bulb globe temperature only, as it is the industry standard. Wet bulb globe temperature provides a more accurate assessment of heat stress as it accounts for ambient temperature, wind, humidity, solar radiation, relative humidity. We also recommend using clothing and metabolic rate adjustment factors for wet bulb globe temperature. And an example of this can -- for clothing and metabolic rate adjustments is provided in ACGIH's TLV that was published in 2023.

Heat index is insufficient to use as a initial or high heat trigger, as it does not account for wind or solar radiation. It's designed for light activity in shaded, mild conditions. And NOAA indicates full sun can raise heat index by 15 degrees Fahrenheit, but there are no clear adjustment guidance in existence.

Adjusting heat index is complex and impractical for untrained individuals, and fixed heat index triggers may not reflect true environmental load.

Their -- on-site wet bulb globe temperature measurements are the gold standard and should be recommended. However, heat stress apps may be used if -- if they are estimating wet bulb globe temperature. AIHA has developed a wet bulb globe temperature heat stress app that estimates wet bulb globe temperature index in both outdoor and indoor settings, and provides health recommendations. Also has the ability to adjust wet bulb globe temperature based on clothing, radiant heat, and metabolic rate. It also has the ability to forecast and see weather conditions in upcoming days.

Although, as mentioned on-site wet bulb globe temperature is recommended, it's also important to emphasize or employers should recognize the limitations of app-based estimates when they use it and understand there may be differences while using a heat stress app.

Additionally, in the proposed standard, we recommend removing monitored -- monitoring exemptions

as quantifying environmental heat load is critical. And there's no research that suggests that implementing all the controls -- control measurements at or above a high heat trigger will be an adequate replacement for environmental monitoring.

Second recommendation group is initial training recommendations. We recommend expanding emergency procedures content, as emergency procedures should be disseminated, rehearsed, and reviewed annually. And all employees, not just supervisors, must understand response protocols if supervisors are absent.

Heat acclimatization recommendations. So OSHA data shows heat illnesses often occur in the first three days of work, and we recommend that there should be a mandatory acclimatization protocol during the first week when the initial trigger -- or excuse me -- when the environmental metric exceeds the initial trigger.

The proposed rule -- and this is related to hydration. The proposed rule should consider the importance of simple strategies to assess hydration status and its requirements for fluid intake and

accessibility. This should also be included in initial training. Since employers cannot control how workers arrive for their worksite, providing education on hydration status is critical to limit fluid losses during work -- the work shift. Some examples include urine color assessment, urine output, thirst, and body weight changes.

Also recommend the use of the buddy system, not only at the high heat trigger, but also during the initial, as heat illnesses can occur without high ambient temperature.

For body cooling. Body cooling can reduce thermal strain, prevent -- that can prevent illness, specifically heat, and improve productivity. While shade is critical, they should be or can be supplemented with active cooling methods such as cooling towels, hats, gaiters.

Next, emergency procedures for heat illness and heat stroke. So to effectively treat someone experiencing a heat stroke, they must have their body temperature down to normal within 30 minutes using equipment with high cooling rates. While we are

thrilled to see the inclusion of the following statement in the standard - take immediate action to reduce the employee's body temperature before EMS arrives - it must be clarified that body cooling equipment with high cooling rates must be used. The gold standard treatment for exertional heat stroke is whole body cold water immersion, using a cold water immersion tub. In a remote setting where a cold water immersion tub is not feasible, a tarp can be used for the TACO method or other similar methods.

There's also an employer responsibility to consider related to treatment of heat stroke. The standard must state that the employer should provide the necessary equipment to treat heat illnesses and heat emergencies.

Related to medical services, a significant challenge for worksite settings is there is often no medical staff on site, and therefore one cannot assess core temperature to determine if it is exertional heat stroke. While the standard states that employers must offer on-site first aid and medical services before the end of monitoring for someone experiencing heat

illness, the standard should require employers to have a on-site medical provider or near -- someone near the worksite who has medical experiences. For example, for employees that -- with -- a worksite with over 50 or a hundred employees as an example, as resources may be limited for those with small businesses.

Alternatively, employers must meet with their local EMS to ensure best practices for recognition and treatment of exertional heat stroke are followed. However, in the absence of on-site medical personnel, aggressive whole body cooling must occur immediately to reduce the risk of permanent complications or death because of heat stroke. For instance, there's many ambulances that will not reach someone within that 30 minute time frame. If -- that is highly problematic because the person's body temperature must be lowered to normal within 30 minutes. And I will end there. And thank you so much for listening to my recommendations and statement.

JUDGE FORT: Thank you, Speaker Morrissey-Basler. Are there any questions from OSHA?

MS. WANGDAHL: Thank you, Your Honor. My name is

Amy Wangdahl with OSHA and the Directorate of Standards and Guidance. And we do have a few questions. Thank you, Ms. Morrissey-Basler, for your testimony. Before we begin, we do have a number of questions, but I just would like to remind you that you can either answer the questions now, or you can submit them in your post-hearing comments. I would like to turn over the questions to my colleague, Jennifer Kim, who's going to ask some questions on PPE.

MS. KIM: Good afternoon. This is Jennifer Kim with the Directorate of Enforcement Programs. Thank you for your testimony. I just have two questions on personal protective equipment, PPE. The first one is regarding vapor impermeable clothing. How should employers determine safe working conditions when vapor impermeable clothing is required?

DR. MORRISSEY-BASLER: Yes, I will provide additional information. But briefly, there is clothing adjustment factors that can be used when using wet bulb globe temperature as an environmental metric. But as stated, I will expand on that post-hearing.

MS. KIM: Great, thank you. And the second

question is, in situations where employers provide personal cooling devices such as cooling vests to employees, what recommendations do you have for ensuring that these devices maintain their beneficial cooling properties?

DR. MORRISSEY-BASLER: Yes. So employers should consider their work environments and the resources available to them. So for example, for cooling vests, they may not be adequate if you do not have access to a -- a freezer to be able to have the -- the cold packs frozen. Additionally, there are some situations that cannot remove PPE. So the employers must consider the appropriate body cooling gear for those situations, and moreover, should select body cooling devices or products that are going to cover as much body surface area as possible to facilitate appropriate cooling.

MS. WANGDAHL: Okay. Thank you. Next, we'd like to go to Zoe Petropoulos, who's participating virtually.

MS. PETROPOULOS: Hi. This is Zoe Petropoulos with the Directorate of Standards and Guidance. Thank you for your testimony. I have a few questions for

you, and I want to start about -- on the topic of identifying heat hazards. And you mentioned a few recommendations. So as you mentioned in your testimony, but also in Korey Stringer Institute's written comment, you all recommend the use of on-site measurements of wet bulb globe temperature. And my first question on that topic, are you aware of any employers who are already successfully using wet bulb globe temperature measurements at their work sites to assess heat stress?

DR. MORRISSEY-BASLER: Yes. So in particular, without naming any companies, I have worked specifically with manufacturing companies that have utilized it. And so that has been the primary work that I have done and seen. However, there are many out there that do use it successfully. And again, I'm happy to expand on that post-comments -- within the comments.

MS. PETROPOULOS: Yeah, we would welcome any details or examples. And of course you can withhold company names in that information.

DR. MORRISSEY-BASLER: Perfect.

MS. PETROPOULOS: My next question is similar. So we heard from multiple commenters that wet bulb globe devices are difficult to use for them in their industry. And they mentioned that one reason is that crews move around frequently. And at least one commenter specifically mentioned the time that it takes for the devices to -- to equilibrate before providing a reading. And I'm curious if you have suggestions or alternatives you would propose for these situations, maybe where crews move around frequently during a work shift?

DR. MORRISSEY-BASLER: Yeah, I think it's entirely depends on their ability to -- to reach that location prior to or if they're truly are going from location to location without sort of understanding where they're going. Because I've worked with -- with some companies who have set up different devices in different locations to be able to accommodate that. However, I think, given the -- the large time frame of a work shift, a approximately ten-minute calibration is worth performing to be able to provide an actual accurate assessment of the environmental load that workers are

experiencing.

MS. PETROPOULOS: Got it. My next question on this topic. There are - on the market, there are a variety of wet bulb globe devices and they range in price and also the specifications. And if your organizations have any comments on the range of devices that are available and thoughts on if OSHA should specify which devices should or should not be used by employers in this context, we would be interested in your organizations' input on that.

DR. MORRISSEY-BASLER: Yeah. So you're correct. There are a lot of different devices out there. If I'm looking for a device that I feel confident is going to provide accurate measures, I would look to data to support that. So any employers having questions about that, I would highly recommend doing that. I -- but I think it's important to also provide the employer within, you know, a recommendation or a standard, the wide array of choices and let the employer be able to determine that themselves. But I would highly recommend focusing on those devices that are backed by scientific evidence through validation.

MS. PETROPOULOS: Got it. And changing topics a little bit. You mentioned the recently developed AIHA app for estimating wet bulb globe temperature. And if AIHA has any data that validates the -- the wet bulb globe temperature values produced by this app, including the inputs that are provided by the user, like the ones you mentioned, we would be interested in seeing those in your post-hearing comments if they're available.

DR. MORRISSEY-BASLER: Yeah, we're actually in the process of doing that. So that will be -- however, I do want to note that the development of it was based on a prototype that has been validated. And I'm more than happy to provide the -- the scientific paper associated with that.

MS. PETROPOULOS: Thank you. My next question on this topic. So some commenters recommended that OSHA allow employers to use personal sensors for monitoring heat stress and heat strain. And what is your professional opinion and your organizations' opinions of using personal monitoring devices in lieu of area based monitoring?

DR. MORRISSEY-BASLER: I can definitely provide more information post, but I will say, while they're a good estimate of what the thermal load may be, I think that if they're being used that individuals need to understand the limitations of them because many of them have not really been scientifically validated. However, happy to expand on that in - in my comments.

MS. PETROPOULOS: Got it. Thank you. I want to change topics a little bit and talk about a very specific part of the preamble. And -- and I didn't hear you touch on it in testimony, but forgive me if I missed that. So I just want to ask if you're familiar with the guidelines and table that OSHA provided in the preamble of the proposed rule, which was based on the 2022 study by Foster et al. for evaluating when fan use may become harmful.

DR. MORRISSEY-BASLER: Uh-huh.

MS. PETROPOULOS: Okay. So we're wondering what is your professional opinion and your organizations' opinions on the conclusions and recommendations that OSHA derived from this paper and whether you agree with the conclusions or you disagree?

DR. MORRISSEY-BASLER: Yeah. I'd have to go back and review in more detail. However, I will say that, in a consensus document we created with 51 experts, we did not advocate for the use of fans over 104 degrees Fahrenheit. But I will take a look further at that particular paper and be able to provide a more extensive comments post.

MS. PETROPOULOS: Great. And I'll add on that, while you're doing that, we would be interested to hear whether you think the guidelines are sufficient and feasible? And also if your organizations -- if you disagree with our approach, if you would have alternative approaches that you would recommend?

DR. MORRISSEY-BASLER: Sure.

MS. PETROPOULOS: And then my last question for you is just whether you're -- you or your organizations are aware of any data or papers or reports that OSHA did not cite in the proposal that could be used to evaluate the effectiveness of heat injury and illness prevention programs in reducing heat-related injuries, illnesses, and fatalities. And if you are, if you could submit those in your post-hearing comments.

DR. MORRISSEY-BASLER: Sure. Yeah, happy to.

MS. PETROPOULOS: Thank you. And that's it for me, Amy.

MS. WANGDAHL: Thank you. We'd now like to go to Jason Hammer, who is also participating virtually, to discuss some emergency response and planning.

MR. HAMMER: Jason Hammer with the Directorate of Standards and Guidance. Thanks again for your testimony. So in response to a heat emergency, your comment from Korey Stringer Institute recommends whole body cold water immersion using a cold water immersion tub, or when this option is not feasible, using a tarp with ice and water to perform the tarp-assisted cooling oscillation method or TACO method. Are there other rapid cooling interventions you would recommend during a heat emergency, or are there methods you believe that are insufficient?

DR. MORRISSEY-BASLER: Yes. So it's very, very important for someone who is experiencing an exertional heat stroke is to aggressively cool them. And so any cooling that is very limited in covering body surface area is not going to be sufficient. So if you had a

small towel, as an example, that's not going to be able to have the cooling capacity to reduce someone's core temperature. There are situations, of course, that -- where the tarp cooling isn't available or a cold water immersion tub. And in that particular instance -- which I hope would be not often -- but it's important to have extremely cold water and ice. And example would be towels cover their entire body surface area and continuously, continuously replace to ensure that their body is cooling. But I'm happy again to provide a little bit more detail in the comments.

MR. HAMMER: Thank you. Yeah, that'd be great. Any specific examples of methods you are aware of that are successfully being used by employers -- yeah, in post-hearing comments. That'd be great. Thank you. That's it for me, Amy.

MS. WANGDAHL: All right. We'd like to go to Tiffany DeFoe next, who is participating virtually, and discuss rest breaks.

MS. DEFOE: For the record it's Tiffany DeFoe, Directorate in Standards and Guidance, OSHA. I wanted to ask -- well, let me preface this by saying that, in

the written comments that you submitted for Korey Stringer -- or with Korey Stringer, you noted that many investigations suggest that short periods of passive rest have little effect on physiological recovery, i.e., reduction in core temperature and heart rate, particularly during repeated bouts of physically demanding work in the heat. And you gave -- provided a couple of citations. Looking through those, it seems -- it seems evident that it might be very difficult to name a number for a length of rest break without a lot of context, in terms of the exertion level, any cooling strategies in play or not in play, and other factors.

So understanding that, I'm just wondering if you would care to comment, now or in your post-hearing comments, whether -- whether you think that there is any value to providing sort of specific -- specific length, like a minimum length of break, such as we see, for example, in the California state rule for as-needed rest breaks, the rest breaks taken voluntarily by workers when they feel the need to prevent overheating? And if there's any reflection that you would want to

give on the way that the mandated scheduled rest breaks at the high heat trigger are scheduled -- or are written up in the proposal?

DR. MORRISSEY-BASLER: Okay. Yeah, I -- I think probably I'll -- will respond in my comments, just so I can provide a more expanded response to address your question. But thank you for your question.

MS. DEFOE: Thank you. And I guess I would just add to that that, in addition to, if we move forward with a rule, what we would put into the regulatory text, you're probably aware that we also provide companion guidance to the rules that can get into more detail about, you know, best practices and things along those lines. And if you have any suggestions for this topic in that area, that'd be appreciated too.

DR. MORRISSEY-BASLER: Sure, happy to. Thank you.

MS. DEFOE: Thanks. That's all I have.

MS. WANGDAHL: Okay. We have a few questions from Joo-Hyung.

MS. SHIN: Hi. This is Joo-Hyung Shin from OSHA. I have several questions on -- for economic analysis. My first question is about the buddy system. In your

testimony, as well as your written comments, you recommend that the buddy system be required at the initial heat trigger as well as the high heat trigger. Could you elaborate how you envision a typical buddy system interaction, like specifically, how long and how frequently the interactions to evaluate a buddy might take on average?

DR. MORRISSEY-BASLER: Yeah. I'm happy to provide more information. However, I think for -- what I want to focus most on for the buddy system is that there should be an individual who is able to look after someone, to evaluate signs and symptoms of a heat-related illness. As mentioned, because it's not always going to happen when the environmental heat load is high. It can happen when someone is just performing a very heavy, physical, exerting job. And so I think having an evaluation or observing method to be able to evaluate those appropriate signs and symptoms are important. But again, I will expand a little bit more in the comments.

MS. SHIN: A follow-up question. In your experience, can nonmedical professionals be trained to

identify signs and symptoms of heat-related illness?

DR. MORRISSEY-BASLER: Yes. So I think in terms of evaluating -- just focused on signs and symptoms, I think that yes, people can have -- not with a hundred percent confidence -- but can evaluate whether or not someone's -- might be having a heat stroke. As far as far as recognition that would be -- so that would be assessment of core temperature. That has to be done by a medical professional. However, we always state that if someone is suspected to have an exertional heat stroke, that whole body cold water immersion, even by people that do not have the medical background, should be initiated because of that critical 30 minute time frame where that person's body temperature must be reduced.

MS. SHIN: One final follow-up on the buddy system. So are you aware of buddy systems being used in - across different industries for other non-heat-related purposes - like non-heat-related safety purposes. Like are - are you aware of examples of buddy systems used at worksites, in general, besides heat-safety.

DR. MORRISSEY-BASLER: I -- I am not -- I'll say not really, but I would imagine that they would be there for fall risk. But I -- I have personally not been involved with any buddy system related topics outside of heat.

MS. SHIN: Thank you. My next question is about rest breaks. So in the preamble of the proposed rule, OSHA cited data analyses that suggest that worker productivity declines in the heat. Sorry. I will state -- ask my question again. Excuse me. So we cited data analyses that suggest that worker productivity declines in the heat, but those declines are partially offset by the rest break requirements. Is this conclusion consistent with your observations and review of the literature?

DR. MORRISSEY-BASLER: Yeah, I will -- I will address that a little bit further in -- in the post-hearing comments, so I can provide an adequate response to your question.

MS. SHIN: Yes. So if you're also aware of any data evidence that OSHA did not identify in its preliminary analysis, we would greatly appreciate that

if you can share any of those in post-hearing comments.

DR. MORRISSEY-BASLER: Sure.

MS. SHIN: My next question is about acclimatization. I'm sorry. Bear with me. Would you expect that on average, when comparing acclimatized workers versus unacclimatized workers, would you expect that on average unacclimatized workers have lower work output than their acclimatized counterparts while working in the heat?

DR. MORRISSEY-BASLER: Uh-huh. Do I agree with that -- is that the question? I apologize.

MS. SHIN: Yes. Do you agree or disagree with the hypothesis that if you are acclimatized -- if you're working in the heat acclimatized, you will still be more productive than when you are not acclimatized?

DR. MORRISSEY-BASLER: So based on the acclimatization research, I would suspect that someone who is acclimatized is going to have a much higher, not only thermal tolerance, but a physical work capacity than someone that is unacclimatized. If that helps support your question. If not, I'm happy to address a little bit further as well in the comments.

MS. SHIN: Thank you. This is my last question, which is about your 2021 paper that you -- that was cited in your written comments. In your submitted comment, you cite Table 6, which contains ranges of dollar cost estimates for different types of cooling strategies. We find this table very informative for our economic analysis. If you could provide, in post-hearing comments, more detail on the source and derivation behind these dollar cost estimates that you provided in Table 6 in the table -- we would greatly appreciate that, if possible.

DR. MORRISSEY-BASLER: Yes, absolutely.

MS. SHIN: Thank you. That's all.

MS. WANGDAHL: Thank you for your time and testimony, Ms. Morrissey-Basler. Your Honor, that concludes the questions from OSHA.

JUDGE FORT: Perfect. Does the Solicitor of Labor have any questions?

MS. WILES: Thank you, Your Honor. Linda Wiles from the Solicitor's Office. I don't have any additional questions. And I also thank you for your time and testimony.

JUDGE FORT: Are there any participants with questions?

MS. CARLON: Yes, Your Honor, we have two. The first is from Ms. Shrestha. Please state your name for the record.

MS. SHRESTHA: Hello. My name is Ayusha Shrestha from the AFL-CIO. Thank you so much for your testimony today. I wanted to ask with -- due to your experience and involvement in this, can you explain how the hierarchy of controls is reflected in the ANSI/ASSP A10.50 standard on heat stress? I have a follow-up question after that.

DR. MORRISSEY-BASLER: Sure. So if I -- if I can clarify the question quickly. Is -- you're -- you're wondering how the hierarchy of controls is implemented in the voluntary standard. Is that correct?

MS. SHRESTHA: Yes.

DR. MORRISSEY-BASLER: Yeah. So I can provide, again, more specific details. However, the voluntary standard utilizes the engineering controls and administration controls, which is part of the hierarchy of controls. So an example of administration controls

would be like training or education. Engineering is changing the work environment, so that may be ventilation, as an example. And so those are just a few components. But again, happy to make it a little bit more clear in the -- the comments.

MS. SHRESTHA: Thank you. And given that the ANSI heat standard requires -- or at least recommends, since it's voluntary -- engineering controls and using the hierarchy of controls, yet the current standard proposal by OSHA does not include this. Could you explain why using the hierarchy of controls is the appropriate approach for controlling heat exposures in the workplace? What does that tell us about the importance of addressing heat hazards at their source?

DR. MORRISSEY-BASLER: Yeah, I think that the hierarchy of controls is a foundational safety framework and is well recognized across the safety community. So I think that using that paradigm is important to be able to facilitate appropriate implementation. So not just with heat, but across different health and safety -- or excuse me, I should say occupational hazards. And I think that,

particularly for heat, the hierarchy of controls is helpful to be able to sort of allow employers to determine what controls are most adequately to first implement and especially, given the variety of different industries that are going to be exposed to high heat. So I -- I would recommend it as a appropriate implementation strategy for a heat stress management plan for those reasons. But again, happy to -- to expand a little bit further.

MS. SHRESTHA: Thank you so much. That's all from me.

JUDGE FORT: Thank you. Are there any other participant questions?

MS. CARLON: Yes. We have one more from Ms. Christman. Please state your name for the record.

MS. CHRISTMAN: Yes, hi. Thank you. I'm Anastasia Christman from the National Employment Law Project. You talked some about the importance of training employees and making sure they have knowledge. You implied early in your comments that you thought there was an important role for them in developing these, and I was just wondering if you could explain

that - that sort of notation that you made?

DR. MORRISSEY-BASLER: Yeah, absolutely. And I apologize, I - I kind of ran short of time. So I wanted to - to mention that, because while the standard does include that the involvement of individuals or employee implement - input. Excuse me. I think that OSHA could -- should consider more specificity to how the feedback or involvement of employees should be, ensuring that there's a diverse group of workers who are a part of that input. And then I would also recommend the documentation of employee input and how they would specifically put that input into their heat stress management plan, as some examples of that. Thank you for bringing that up.

MS. CHRISTMAN: Yes, thank you for that. That's my only question. Thank you.

JUDGE FORT: Thank you. I think we're on to the next.

MS. CARLON: Yes, Your Honor.

JUDGE FORT: Thank you. Thank you, speaker Morrissey-Basler.

MS. CARLON: The next speaker is Miranda Dally.

Please state your name and affiliation for the record.

DR. DALLY: Miranda Dally. And I'm here as a private citizen.

JUDGE FORT: All right. Thank you. You may begin.

DR. DALLY: Thank you for having me here today to speak in support of the Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings proposed standard. I'm Dr. Miranda Dally. I'm a research assistant professor in Colorado and have more of a decade of experience in workplace safety and health. I'm speaking here today on behalf of myself and not my employer, nor funders of my research.

Over the last decade, I've focused my research on the impact heat has on the health, safety, and well-being and productivity of workers, both domestically and internationally. My work has shown that heat acts as an important hazard multiplier, meaning that common workplace injuries occur even more frequently when workers perform their tasks under hot conditions. For example, as temperature rises, so do rates of occupational injuries.

In a recent research study, I found that increased weekly average temperatures were associated with an increased risk of injury among construction workers here in the state of Colorado. In the summer months, for example, we observed a two and a half percent increase in the incident rate of job-related injuries of all types.

In work done by me and others, we have also seen additional impacts, including declines in worker productivity. In a study I conducted with a multinational agribusiness in 2018, I found that heat was responsible for two percent reduction in weekly productivity among manual laborers. I'm happy to provide you with these references to the public -- published science in post-hearing comments.

OSHA has asked for input on two important considerations that I'd like to address. The first is regarding how work/rest cycles are currently implemented in work settings, and what are the limitations for implementation. In an assessment of heat safety needs that I conducted through interviews with construction companies across the state of

Colorado last year, I found that while companies all acknowledged the importance of work/rest cycles, how they were implemented was inconsistent. As one worker summarized, quote "the other company I used to work for they gave you 30 minutes break in the morning, 45 minutes on lunch, and we take 15 minutes in the afternoon, but they give you like 15 extra minutes. It depends. Every company is different. Like another company I used to work for, they don't give you breaks in the morning. They just give you a 45 minute break - I mean lunch. So there are different schedules", unquote. The biggest challenge we found that participating construction companies have in implementing work/rest schedules are productivity demands.

This leads to the second consideration OSHA has asked input on regarding how does productivity or output -- excuse me -- output-based payment schemes affect the ability of workers to follow heat illness and injury prevention training guidance or requirements? As one project superintendent told us, quote, "if you're not working and working quick and

efficiently, you're losing money. So it's kind of a construction industry standard as far as the pressure to work quickly. And plus some of these guys out here get paid by the piece. So they want to get the job done, get as many pieces up as possible, and then get out there. The more pieces they get in, the more they get paid. That's kind of the hard part. If you go and slow them down and make sure they're doing stuff safely, and they get frustrated because they're losing money, if you're slowing them down", unquote.

There's a need in this country to treat heat as a workplace hazard. The construction industry illustrates this point. While some companies already have robust heat safety programs, others didn't recognize it as an issue for their workers. This can result in inequitable access to heat safety policies and practices among workers, even at the same job site. For example, when a general contractor was asked if wearable cooling technology was provided to everyone on site, they responded, quote, "typically only for our guys", unquote.

As one worker put it, quote, "maybe subcontractors

needed more training for their companies like we usually get at our company", unquote. A standard to address heat injury and heat illness would ensure equitable access to heat safety protections for all workers, not only those whose companies acknowledge and prioritize heat as a safety hazard. Thank you.

JUDGE FORT: Thank you. Are there any questions from OSHA?

MS. WANGDAHL: Thank you, Your Honor. This is Amy Wangdahl with OSHA and the Directorate of Standards and Guidance. And we do have some questions. Thank you, Dr. Dally. First, I'd like to turn it over to Zoe Petropoulos, who is participating virtually. She has a few topics to discuss.

MS. PETROPOULOS: Hi. This is Zoe Petropoulos with the Directorate of Standards and Guidance. So my first question is about something you actually mentioned in your testimony. You mentioned recent literature on the relationship between heat and occupational injuries and that this is something that you've also studied. In the proposed rule in the preamble, OSHA cited a 2021 paper by Park et al., which

studied this data in California, and also a 2024 report from the Workers' Compensation Research Institute, which evaluated data across multiple states. I'm wondering if you're familiar with either or both of these papers?

DR. DALLY: I'm familiar with the first one. I'm not sure about the second one.

MS. PETROPOULOS: Got it. I'm wondering if, specific then, to that paper, can you speak to your professional opinions on the strengths and limitations of this analysis?

DR. DALLY: I would --

MS. PETROPOULOS: Either now or in post-hearing comments. Sorry.

DR. DALLY: I -- yeah, I'm not prepared to speak to the strengths and limitations now, but I will provide my assessment of that in the post-hearing comments.

MS. PETROPOULOS: Got it. And if you are able, in your post-hearing comments, OSHA would welcome any thoughts you have on our description of those papers and reports and if you're aware of any additional data

or studies related to this topic that we did not cite? And I know you mentioned that you'll be sharing your -- your paper in post-hearing comments. But anything else that you've identified that you think OSHA did not cite, we would be interested in that in your post-hearing comments.

DR. DALLY: I'll ensure -- I'll be sure to include them in the post-hearing comments.

MS. PETROPOULOS: Thank you. My next question is on a related topic, but I want to focus on -- rather than injuries of -- of all kind of coded causes -- specifically heat-related illnesses and that are identified in official data sets by their ICD or OIICS codes. We heard testimony from multiple medical professionals and surveillance experts last week that they believe that heat-related illnesses, using these ICD and OIICS codes, among workers are undercounted in official administrative and surveillance datasets. I'm wondering if you agree with this, why or why not?

DR. DALLY: I do agree with that. I think that we see - a lot of the research that we do, the reason that we see - looking at all-cause injury rather than just

heat-related injury specifically, is that the rate of heat-related injuries that show up in workers' compensation data are extremely low. One reason I believe that this is to be the case is that in - only heat-related injuries that rise to the severity of requiring medical attention will end up having a workers' compensation code related to that.

And so what we understand from our work with construction companies as well as agricultural companies is there tends to still be this culture of not wanting to seek medical attention necessarily. And so if a worker is experiencing signs and symptoms of a heat-related illness, they're more likely to just, you know, take a break, cool off in their car, and then they'll come back to work the next day. They're not going to go to the ER for that. And so that's not going to be something that we're going to end up seeing in the administrative data.

MS. PETROPOULOS: Thank you. My next question is if you're aware of any data, analyses, reports, or papers that OSHA did not cite in the proposal that could be used to evaluate the effectiveness of heat

injury and illness prevention programs in reducing heat-related injuries and illnesses and fatalities? And if you are aware of any - any such papers, data, analyses, et cetera that OSHA did not cite, if you could submit those in your post-hearing comments?

DR. DALLY: I'll include those in my post-hearing comments.

MS. PETROPOULOS: Thank you. And that's it for me, Amy.

MS. WANGDAHL: Okay. I'd like to turn it over to Joo-Hyung Shin to discuss some economic analysis.

MS. SHIN: Hi, this is Joo-Hyung Shin from OSHA. My first question is, in the preamble of the proposed rule, OSHA cited data analyses that suggest that worker productivity declines in the heat, but that those declines are partially offset by rest breaks. Is this conclusion consistent with the observation and review of the literature?

DR. DALLY: So in our analysis that we conducted, where I cited that we had a two percent reduction observed over the course of a week with increasing temperatures. That was within a work setting that was

providing, I believe, up to an hour and a half of rest breaks for their workers throughout the work shift.

That said, I am aware of literature that suggests that worker productivity may be improved by increased rest breaks. However -- and I will provide in my post-hearing comments a citation to this letter to the editor. We -- we assessed that there wasn't enough information provided about the intervention to solely attribute the unobserved effect to productivity strictly to the work/rest cycles that were being implemented.

MS. SHIN: Thank you. My last question is about piece rates. So in your testimony, you mentioned about piece rates in the construction industry in your study. So in our preliminary economic analysis, we estimated that seven percent of workers are paid by piece rate, regardless of the industry. Is this estimate consistent with your observation for construction?

DR. DALLY: I don't feel qualified to answer that. The study that I did with construction wasn't necessarily focused on that. And so that was not something that I collected data on. So I do not feel

comfortable confirming that number.

MS. SHIN: Okay. Yes. But any -- if you later like think of that -- any research that could speak to the prevalence of piece rates payments in especially nonagricultural industries, OSHA would appreciate that information. Thank you.

DR. DALLY: Thank you.

MS. WANGDAHL: Thank you for your time and testimony, Dr. Dally. We look forward to your post-hearing comments. And Your Honor, that concludes the questions from OSHA.

MS. CARLON: I'm unsure if we may have lost connection with Judge Fort. Can you hear me, Judge Fort?

JUDGE FORT: I don't know if you all can hear me. Am I having --

MS. CARLON: Now we can. Now we can.

JUDGE FORT: Apologies. I was having some technical difficulties. Are there any questions from the Solicitor of Labor?

MS. WILES: Thank you, Your Honor. Linda Wiles from the Solicitor's Office. I don't have any

questions. Thank you again for your time and testimony, Dr. Dally.

JUDGE FORT: Are there any questions from participants?

MS. CARLON: Yes, Your Honor. We have one from Mr. Barab. Please state your name for the record.

MR. BARAB: Hi. My name is Jordan Barab. Yes. I had a couple of questions relating to breaks. First of all you mentioned -- I think piece rate was mentioned. Do you think that breaks are going to be as effective -- or should I say that workers will be as willing to take breaks if they are not paid for those breaks?

DR. DALLY: In my experience, with the workers that I had spoke to, I feel that they would be more reluctant to take breaks if they weren't paid during those breaks.

MR. BARAB: Okay. Do you think breaks are adequate to prevent heat-related illness or death, if workers are only allowed to take breaks after they start having symptoms of heat-related illness?

DR. DALLY: I do not feel qualified to make an

assessment on that.

MR. BARAB: Okay. And do you think that the standard should specify the length of a break or should employers be allowed to say you get a five-minute break or a seven-minute break or a two-minute break? Is there any -- any -- any ideal time that workers should have for a break and should OSHA be requiring something that is a required amount of break time?

DR. DALLY: It is my personal opinion that I think that there should be a minimum amount of break provided. However, every worksite is different. And when we're talking about a standard that will affect various geographic regions that have different needs, I think that there needs to be space for flexibility in how those are implemented.

MR. BARAB: Okay. Thank you.

JUDGE FORT: Mr. Barab, I was having technical difficulties, and I didn't hear it if you said it. But I don't know that you stated your affiliation.

MR. BARAB: I don't have an affiliation. I'm retired.

JUDGE FORT: Perfect.

MR. BARAB: Formerly with OSHA.

JUDGE FORT: Okay. Are there any other participant questions?

MS. CARLON: There are none, Your Honor.

JUDGE FORT: All right. Wonderful. Thank you, Speaker Dally.

MS. CARLON: The next speaker is Rosemary Sokas. Please state your name and affiliation for the record.

DR. SOKAS: Thank you. My name is Rosemary Sokas, and I'm also retired. I have a kind of a - I'm a member of the American Public Health Association, and they did submit written standards - I'm sorry they submitted written comments, but basically were not able to make the registration deadline for this. So I have kind of an informal approval to, you know, kind of speak for them if that's permissible. But basically, I'm speaking as a private citizen.

JUDGE FORT: You may begin.

DR. SOKAS: I'm -- I'm Dr. Rosemary Sokas. Thank you so much for this opportunity. I'm a physician, board certified in occupational medicine and internal medicine and emergency -- and emeritus professor at

Georgetown University, and have served in the past on the Armed Forces Epidemiology Board. In thanking OSHA for its outstanding work on this standard, I would like to note that for all industries, there's been a substantial and significant decline in worker fatalities from all causes, while heat stroke deaths have increased during that same period of time. So I did want to emphasize that OSHA standards, in general, have saved lives, and that this heat illness prevention standard is urgently needed.

I have three points. First, there's no such thing as an invulnerable worker, and workers are at risk in every region of the country. Second, heat stroke is a terrible, often lethal illness, and treatment remains problematic. Third, prevention works and must be prioritized. OSHA's standards properly focus on prevention and should account for exertion levels and rest break requirements, include the use of the wet bulb globe temperature -- as you've heard quite eloquently -- and also include medical screening.

So healthy, fit, strong people pushing themselves die of heat stroke. Athletes and military recruits

used to experience fatal heat stroke with tragic regularity, until the athletic community and the military decided to address the problem. As many presenters have stated, young workers, those new to a job, and low wage workers often try to power through the work. So-called self-managed acclimatization is dangerously unsafe for these workers, especially if there are piece rate systems in place.

Furthermore, it doesn't matter that workers in Texas and Florida live with more heat. They also die more from it, as the two states with the highest numbers of worker heat stroke fatalities. Fully 60 percent of the heat-related deaths among construction workers in a study I participated in occurred in the South. This year for the first time, there are also heat advisories in Fairbanks, Alaska. So the entire United States will benefit from this standard.

When young, completely healthy people who are pushing themselves develop exertional heat stroke, depending on how quickly they receive care, over one fourth of them may die. A published OSHA fatality investigation emphasized this point. A 19 year old

landscaper developed heat stroke on his first day at work. He had previously been healthy, with no chronic medical conditions, and was taking no medications. He started work at 8:00 a.m. and took three 30 minute breaks during the day. At 4:00 p.m., he was found by a coworker lying unresponsive next to a lawn mower. EMTs measured his core temperature at 108 degrees Fahrenheit.

A half century ago, as an internal medicine resident, I cared for patients in the intensive care unit at Boston City Hospital during a heat wave. Patient after patient experienced terrible illness and half of them died. Back then, we had only supportive care to offer. You supported the patient until his or her own body recovered. Today, with one exception, there is only still supportive care to offer, 50 years later.

Research efforts to reverse brain and kidney damage are taking place in mice, but not yet in people. Among workers with other risk factors -- they may be older or pregnant or obese, or with a score of health conditions ranging from heart failure to a simple bout

of diarrhea -- or who are taking any one of dozens of drugs, the death rate remains unacceptably high. The sole successful intervention that Dr. Morrissey-Basler presented so well is to immediately place the victim into an ice water bath.

At athletic -- at athletic events like the Boston Marathon and basic training, for example, at Parris Island, these ice baths have greatly reduced severe illness and mortality. Rapid and effective first aid response is crucial, as is a buddy system.

Preventable deaths are especially tragic and heat stroke is an awful illness. The key features are thermal and central nervous system dysfunction. Your body loses the ability to regulate heat. Your proteins start to denature. You are hot, desperate, delirious, in great distress, but unable to think clearly or help yourself. You may be alone or surrounded by people who have no idea what is happening. Maybe you survive to reach the hospital, but this is no guarantee. You might recover and walk out eventually, or you might die after a few days or a few weeks of a devastating hospital course; coma, micro clotting, widespread

bleeding, multi-organ failure, shock, despite heroic measures to maintain fluid balance, breathing, blood pressure, et cetera.

The same OSHA investigation makes this point. At the local hospital, despite the use of a cooling blanket and iced IV fluids, this previously healthy 19 year old man continued to be unresponsive, experienced seizures and spontaneous bleeding, and required intubation. After two days in the intensive care unit, he developed ventricular fibrillation and died.

We used to think that if you manage to survive, you would have no long-term consequences. We now know you will have an increased risk for future heat stroke, increased all-cause mortality, and a risk of death from delayed cardiovascular disease, stroke, and end stage renal disease that is two to nine times that for people who never had heat stroke.

Prevention is what counts and prevention saves lives. While the proposed standard is an excellent start, it should require wet bulb globe monitoring, as you've heard eloquently and repeatedly. Rest break requirements should also be modified based on worker

exertion levels. And finally, the military, athletics, and high performing industry also provide medical evaluation. Written comments from APHA, from the American College of Occupational and Environmental Medicine and from others have amply documented how important this is. The International Labor Organization recommends both medical screening and the use of a wet bulb globe temperature measurement, even for low and middle income countries.

While the goal here is not to exclude the individual from work, it takes more -- and while training and education of both workers and supervisors is critically important, it takes more than a flip chart to address the many risk factors workers and supervisors need to know about. And any required workplace modifications will need supporting information.

Employers in these hearings have expressed concerns about what is and isn't protected information, and some have complained that the training and first aid requirements expect supervisors to be medical professionals. These concerns can be addressed through

the inclusion of a medical screening requirement, as simple as the one used for respirator clearance. Workers self-complete a questionnaire that is reviewed only by a clinician. And those with identified risk factors are evaluated by the clinician. All medical information remains confidential, and the clinician tells the employer whether any modifications to the heat illness prevention plan may be needed for this individual, without revealing any medical information.

ACOEM's written comments included publications about a medical screening program with these elements in a Texas municipality that reduced worker compensation cases. And one of OSHA's occupational medicine physicians actually taught the main author of one of the studies and co-authored that paper. OSHA has extraordinary internal expertise, and its Office of Occupational Medicine and Nursing has produced some of the best data available about occupational heat illness risks and prevention. I urge OSHA to make full use of their expertise to incorporate a commonsense approach to medical screening in this standard. Thank you.

JUDGE FORT: Thank you. Are there any questions

from OSHA?

MS. WANGDAHL: Thank you, Your Honor. Yes, we do have some questions. This is Amy Wangdahl with the Directorate of Standards and Guidance. And thank you, Dr. Sokas, for your testimony today. I have the first question on observing signs and symptoms of heat illness. We've heard from some groups that requiring a buddy system where workers identify symptoms of heat illness in their coworkers is not possible because workers are not medical professionals. In your experience as a medical professional, are the symptoms of heat illness something that nonmedical professionals can be trained to identify?

DR. SOKAS: Absolutely. And it's a really clear message that the training can get across to the -- every worker and every supervisor. So there are two things you have to watch out for that are really important. First, starts with heat exhaustion. This is when you get the headache, you feel terrible, you might have nausea, you might even be vomiting. You might be exhausted and just fatigued. So that's heat exhaustion. This is a big problem. You have to stop.

You can recognize it in yourself and you can support people to rest, shade, recovery, et cetera.

Now every -- and so the critical difference is with heat stroke -- with heat stroke the central nervous system is involved. So you're confused. The individual cannot help themselves, but their neighbor can. The next person over can. You basically find out -- ask the person you know, what's your name? Where are you? You -- do you know what day it is today? They're confused. The minute you see that confusion, you know something really terrible is going on. We've heard presentations where people misinterpreted that in the past as, oh, you know, maybe they're using drugs or whatever. This is a crucial piece of information.

Now, if a person happens to be hot and dry -bingo. That is heat stroke without going beyond anything else. But you can still be sweating or you can have sweat before, so you're still soaking wet. So it's not the hot and dry that you need, it's the confusion. And that's when you call EMS. That's when you get them into the ice bath. That's when - you know if you

overreact, it's fine. Because otherwise, as you've heard I think very eloquently, people will die if they don't get immediate care and treated right away. But this is treatment. This is not prevention. This is treatment.

MS. WANGDAHL: Great. Thank you. I -- I apologize. I failed to mention that you can either answer our questions today or submit post-hearing comments. That goes for all of our questions. So now I'd like to turn to Zoe Petropoulos, who's attending virtually, who has a few topics to discuss.

MS. PETROPOULOS: Hey, this is Zoe Petropoulos with the Directorate of Standards and Guidance. My first question -- we heard from multiple medical professionals and surveillance experts last week that they believe heat-related illnesses and injuries among workers are undercounted in official administrative and surveillance -- surveillance datasets. Do you agree with this? Why or why not?

DR. SOKAS: Oh, Dr. Petropoulos, this is a huge issue. And you've heard, I think also in these hearings, a lot of discussion about how -- oh, my

goodness workers don't want to report, employers don't recognize, you know, there's -- but -- but I'll go even further. So even further, what's happening -- and there's a really interesting data on this -- that -- so your -- most of our data of heat stroke -- well, heat illness, heat exhaustion -- forget it. You know, it doesn't get counted because it's very rare for people -- - not rare, but it's unusual for people to have the workers' compensation capabilities and all of that. If they're outdoor workers and they're a little insecure in their workplace, they just don't report it. There's a thing in construction called the bloody handkerchief sign, which is that even if you're bleeding, you don't report it because you don't want to lose the work. So there's massive underreporting for -- for heat exhaustion.

But for heat stroke, where you would think this would be, you know, death and obvious, for the medical examiners, it's not always that obvious. They need to have -- in fact, up until 1999, the only data CDC was collecting was where the medical examiner said the heat was the cause of the death. And then in 1999, they

added, well, if heat contributed to it. So maybe you wouldn't have gotten this heart attack, or maybe you wouldn't have had the stroke if it hadn't been 105 degrees outside. So then the medical examiners could add that in, and that kind of doubled the number of deaths that we report in the United States.

And then there's this really interesting study out of British Columbia, where they had a terrible heat wave a few years back, where they actually looked at what the medical examiner was -- so they took the period of time -- this is a study by Lee et al. where they took the deaths that occurred over a specific period of time during the heat wave in, I think it was 2021, and they compared it to like, you know, an eight year average of the preceding, you know, same window of time. And they found out that, among certain deaths, it was elevated. The number of deaths that were attributed to either being caused by heat or exacerbated by heat was up by a third.

But when you looked at the total number of deaths -- this is -- this is what we learned during COVID. When you're looking at excess mortality across

the whole population, it doubled. It doubled. So even with this -- this you know, recording system where you can say, yes, it might have contributed, you're still undercounting heat stroke mortality. So this is a -- this is a big problem with heat -- with heat stroke and with heat illness in general.

MS. PETROPOULOS: Thank you. My next question is about acclimatization. We've heard comments arguing that OSHA did not account for what is described as natural acclimatization, that workers develop from living in the same locale as where they work, suggesting that heat exposure outside of work is adequate for achieving acclimatization. Do you agree with this? Why or why not?

DR. SOKAS: Yeah, this is completely nonsense. So you don't get heat acclimatization for a work -- for a work activity by sitting around in a hot environment. You get it by working into the job. And I think the guidance that OSHA uses is 20 percent a day, which -- which makes really good sense most of the time, because much of the heat that is occurring within the human body is not from external sources. Although obviously,

if you're standing in the sun, that's a huge source. But -- but it's internally generated from your own metabolic rate. And I think you've heard speakers mention this as well.

So unless somebody is actively -- walking your dog at 8:00 a.m. in Houston -- I'm sorry, that is not the equivalent of being acclimatized. So -- so you really do need to have a -- a recognition that people have to exert themselves cautiously and in increasing doses to achieve the kind of acclimatization you need for a worker.

MS. PETROPOULOS: Thank you. My next question is about rest breaks. From a medical standpoint, can you comment on whether the approach of ensuring rest breaks prior to the development of signs and symptoms of heat-related illness is needed to prevent serious health consequences from the heat?

DR. SOKAS: Absolutely, yes. And -- and I would go further than what -- than what OSHA currently has drafted. You know, to kind of recognize what the military has figured out and what NIOSH has figured out in terms of the more exertion people are doing out in

the heat. This is why the wet bulb globe temperature is so important because the sunlight is such a big contributor, that all of those matter. And that you can prevent problems by having -- by having you know, these appropriate rest breaks.

And I think you heard on Friday from Mr. Barab, from Dr. Michaels, from Ms. Berkowitz about how, during the Deepwater Horizon event, they had not a single worker lost from heat stroke in the Gulf areas where all this cleanup is taking place with PPE on because of their very careful attention to those work/rest cycles.

MS. PETROPOULOS: Thank you. That's it for me, Amy.

MS. WANGDAHL: Thank you, Zoe. We'd like to go to Joo -- Joo-Hyung Shin for some economic questions.

MS. SHIN: Hi. This is Joo-Hyung Shin from OSHA. And my question is, in the preamble of the proposed rule, OSHA cited data analyses that suggest that worker productivity declines in the heat, but that these declines in worker productivity are partially offset by rest breaks. Is this conclusion consistent with your understanding of the peer reviewed literature on this

topic?

DR. SOKAS: It is. And you -- I apologize. I missed some of Professor Dally's presentation because of my -- my audio went out. So I'm not quite sure what her response to that question was, but -- but I -- the presentation by Professor Wegman last week was, I thought, pretty compelling. There's other data from laboratory work where they've done actual increased rest breaks for certain tasks like lifting and that sort of thing. And - and the breaks themselves allow people to get the work done, basically. They kind of -- but the -- the large-scale studies, I don't think have been done. But I was impressed by the study from Nicaragua that Professor Wegman presented.

MS. SHIN: Thank you.

MS. WANGDAHL: Thank you for your time and testimony today, Dr. Sokas. Your Honor, that concludes the questions from OSHA.

JUDGE FORT: Thank you. Does the Solicitor of Labor have any questions?

MS. WILES: Thank you, Your Honor. Linda Wiles from the Solicitor's Office. I don't have any

additional questions. Thank you, Dr. Sokas, for your time today.

DR. SOKAS: Thank you.

JUDGE FORT: Thank you. Do -- are there any participants with questions?

MS. CARLON: Yes, Your Honor, we have two. The first is from Ms. Arberry. Please state your name for the record.

MS. ARBERRY: Hi. And thank you, Your Honor. My name is Chenay Arberry. Yeah. And thank you, Dr. Sokas, for your testimony. I found it very illuminating. So you talked a lot about the impacts of heat on the body. Why are workers specifically at heightened risk compared to others? You briefly touched on it.

DR. SOKAS: Well, yes. Thank you. So obviously, for most workers, they don't control the amount of work. First of all, they're -- the -- the -- many workers are doing heavier exertion than most of us would be doing in a voluntary basis. If we're doing exertional activity on a voluntary basis and it's hot outside, we can modify our behavior, we can stay

inside, we can have -- you know, we can take care of ourselves a little bit better. Many workers don't have self-pacing -- most workers, I would say. They -- they don't have the ability, in some circumstances, for example, to start work very early because of zoning laws that restrict noise exposure. So they can't do the kind of flexible stuff that we suggest to them sometimes. So the -- the need for workers to be protected and to have this excessive heat illness prevented is really -- really requires, I believe, OSHA's activity.

MS. ARBERRY: Thank you. Chenay Arberry with AFL-CIO. And just a follow-up. And my last question to that is does heat exhaustion have chronic effects?

DR. SOKAS: Oh, thank you. I'm glad you asked that. So heat exhaustion is -- is really important to identify that people are at risk. But there's kind of a continuum. And sometimes it's serious enough that people do get hospitalized with heat exhaustion. And the same study - that Wang et al. study that showed that you wound up with -- you know, they -- they studied people over 20 years, where they had people who

had been hospitalized for heat stroke, people who had been hospitalized for other heat-related illnesses, primarily heat exhaustion, and then the control population. They found that the people who had been previously hospitalized for heat exhaustion also had significantly more adverse cardiovascular disease, stroke, and end-stage renal disease than people who had never had hospitalization for heat-related illness.

So the -- the heat exhaustion was not a safe thing to have for sure. And you want to reduce the prevalence of it. But it is at least something where people can recognize they have it and then stop. But you don't want people to be experiencing that over and over again.

MS. ARBERRY: That's it for me. Thank you, Dr. Sokas. And thanks, Your Honor.

JUDGE FORT: Thank you. And the next questioner?

MS. CARLON: Mr. Barab?

MR. BARAB: Yes. Thank you. My name is Jordan Barab. I am retired. So Dr. Sokas, thank you for your testimony and a couple of questions, somewhat related to what we've already talked about. The -- somebody

mentioned -- well, the Nevada standard, for example, only provides for a rest break after an employee exhibits signs or symptoms of heat illness, which I think you -- you mentioned is -- is not a good idea. Could you -- could you expand on that and tell me why only having rest breaks for workers who already exhibit signs or symptoms of heat illness is not an adequate provision.

DR. SOKAS: Well, because we're trying to prevent illnesses, and we're not trying to just sort of, you know, run after them. And -- and again, I think as previously asked, the -- you know, there -- once you get to the point where you're symptomatic, you really have gone too far. And we don't really have great long-term data on what that's going to look like. But we do have studies in the United States that are taking place right now that look at, you know, some of the changes of renal function over the course of a long shift, for example, among wildland firefighters, you know, that kind of thing. So -- so we do think that, in fact, we need to be careful about these people getting -- getting ill and -- and that -- and -- and

symptoms are a sign of illness, basically. So you're trying to prevent that.

MR. BARAB: Okay. Thank you. So the Nevada standard also, it -- it states that employers must provide water. It doesn't say how much water or what frequency the water needs to be provided. How much -- how much -- how important is that to specify or to have more information specifying how much water workers need depending on the temperature, how long they're working, et cetera.

DR. SOKAS: Well, yeah. And that's a big area too, with exertion levels and all of that. But so yeah, it's -- it's critically important to have the water and to specify where it's located and to make sure it's drinkable. I think we heard from someone who was saying that, you know, fish scales in the water, kind of, you know, kept people from -- and we've heard a lot about how if there's not a clean bathroom facility available, women for sure are not going to be drinking enough water. So -- so it's part and parcel of, how you have to make sure that people are drinking enough to stay out of kidney failure, basically.

MR. BARAB: I'm sorry, could you -- could you expand on that? You said women will not drink enough water if there aren't decent bathrooms?

DR. SOKAS: Oh, well, I mean, we've known this for -- for a very long time. But you know, if -- if there's not a -- an accessible and a reasonably clean place to -- to go to the bathroom, and it's very clear -- or a safe place -- I mean, you know, it's very clear that women are not going to go behind the cornstalks and do it, you know what I mean? So it's a less of an issue for some of the male outdoor workers, but it's a big deal for women.

MR. BARAB: Okay. All right. Thank you. That's all I have.

DR. SOKAS: Okay.

JUDGE FORT: All right, thank you. Thank you, Speaker Sokas.

DR. SOKAS: Thank you.

MS. CARLON: The next speaker is Kevin Riley. Please state your name and affiliation for the record.

JUDGE FORT: I think you're on mute. I cannot hear you

DR. RILEY: Now?

JUDGE FORT: Yes.

DR. RILEY: Great. Good afternoon. My name is Kevin Riley. I'm Director of the Labor, Occupational Safety and Health Program at UCLA.

JUDGE FORT: You may begin.

DR. RILEY: All right. Well, thank you, everyone. I appreciate the opportunity to speak today. As I said, my name is Kevin Riley. I'm director of the UCLA LOSH program here in Los Angeles. We're a community outreach and engagement program that provides training and education on a wide range of safety and health topics. Our work also includes applied research to evaluate occupational health programs and to inform policy and best practices.

We have published our experiences conducting trainings and workshops on heat illness prevention for workers and their representatives over 20 plus years. We've also conducted research on mortality and morbidity during high heat events in communities with higher prevalence of outdoor workers. And today, I'm here to share some of our experiences related to

occupational heat illness prevention and relevant standards here in California to help inform this important standard setting process. And I should just say, I'm speaking on behalf of myself and our program, not on behalf of my university as a whole.

Before getting into the details of this standard, I want to acknowledge something that came up during the Q&A of the last speaker. And that is why occupational heat exposures is such an important consideration for workers in particular. Heat in occupational settings presents some unique challenges that put workers at increased vulnerability to heat illness.

Workers often face heat exposures at greater frequency, duration, and intensity than members of the general public. This is due in part because work activities may continue despite high temperatures and humidity. They're related to the fact that work tasks are often very physical in nature, so that adds heat burden to the body. And the use of personal protective equipment that workers might have to protect from other hazards can add to the additional heat burdens to the body as well.

Also, workers' ability to respond to heat risks are shaped by job requirements and employer policies. So unlike the general public, workers may not be free to take breaks or to modify their activities without employer approval. And at the same time, employers themselves may not be sufficiently prepared or compelled to take the necessary steps to protect -- to protect their employees.

So for those reasons, OSHA standards can play a critical role in addressing these unique set of circumstances that workers face when it comes to heat exposures. They help to sort of deal with some of those vulnerabilities and underscore the need for proactive preventive measures. And we've seen the success of these kinds of approaches in several state-level standards around the country.

So as many of you know, California has had some form of an outdoor heat illness prevention standard since 2005. Our standard has been revised several times in the last 20 years. The framework of the California standard, in turn, has been adopted by several other states, Oregon, Washington, Maryland.

And then CalOSHA just last year adopted a new indoor heat standard. It was - I believe it was passed in April, and it went into effect almost a year ago today.

In our program's experiences leading training and providing technical assistance on the standards, both of these standards, to workers and worker representatives and small business employers, we found that the California standards and the framework that they offer are generally straightforward, understandable to workers, feasible for employers to implement. We've seen a lot of examples of successful implementation across different kinds of industries. And they're easy measures for inspectors to investigate, which is in turn reflected in the number -- nature of citations that CalOSHA was able to issue.

In terms of the federal standard. We are -- we really appreciate the fact that much of the sort of framework and approach of California and other states has been adopted. Generally, I think it's a very strong standard. I think things like a requirement for written prevention plans -- we've seen them prove to be

really effective tools for helping employers consider a range of measures prior to exposing employees to those hazardous conditions. There are clear trigger temperatures for implementing control measures.

I think one thing that -- that is in the federal standard that we don't have in our standard, which we really commend, is the language around heat safety coordinators. Those are, I think, an important role that -- at the work sites. And the absence of such rules here in California, has at times limited compliance with the effectiveness of the required controls.

And I just want to also uplift the fact I really appreciate the requirements that written plans and training be provided in a language that each employee and supervisor understands. We know that that's an important element to the work that we do, and we think it's really important that there is -- that that's explicitly stated in the standard.

So there's a few other sort of tweaks I have proposed in my written comments back in January. I'll let you refer to those. But overall, I just want to

underscore that we think the standard represents a really strong public health approach to reducing the risk of heat injury and illness. And we really applaud OSHA for moving forward with this important standard to protect American workers.

JUDGE FORT: Thank you. Are there any questions from OSHA?

MS. WANGDAHL: Yes, Your Honor. This is Amy Wangdahl with the Directorate of Standards and Guidance. Thank you, Mr. Riley, for your testimony. I'm going to start with some questions and then pass it over to my colleagues. In your written comment, and as you just mentioned, you commended OSHA for the inclusion of a heat safety coordinator in the proposed rule. Again, as you just mentioned, you said that the absence of such a rule under the California standard has at times limited compliance and the effectiveness of that -- of the required controls. Can you provide some more detail about the limitations of the California standard in this regard? And you can either answer today or you can submit it in your post-hearing comments.

DR. RILEY: Sure. I mean, I think in general, what I would say is with this standard, as with any standard, it's really important to have a designated individual who's responsible for making sure that the provisions are being -- are being implemented and carried out. We have a kind of role like that in some other standards here in California that often are more effective. In the -- in the case of the heat standard, we don't necessarily have that. So often the -- the issues fall back to supervisors or to other -- other workers, for example. And sometimes then the -- the -- the application of this provision sort of fall through the cracks. I can pull together some other additional examples as well and some follow up written comments if that would be helpful.

MS. WANGDAHL: That would be appreciated. You also commended OSHA for ensuring that employees are provided with materials in a language that they understand. Do you have any recommendations for translation tools that could accomplish these goals easily for employers?

DR. RILEY: I don't necessarily have tools offhand

to recommend. I will say that it is important to be engaging with -- with human beings, with individuals. And that could be through, you know, through -- through workers themselves at worksites. It could be through local community-based organizations who have a really good sense of, not only sort of the proficiency in the language itself, but also a really good sense of how issues are discussed within these particular communities. Some of the more technical language that might be used at a work site, or lack of technical language, often is sort of maybe a mix of English and the native language. So -- so relying on -- on individuals, I think, who are familiar with the local community, with the industry, with that workplace are particularly important.

MS. WANGDAHL: Great. Thank you. I want to turn it over to Jennifer Kim in the Directorate of Enforcement Programs.

MS. KIM: Hello. Thank you for your testimony today. This is Jennifer Kim with OSHA Directorate of Enforcement Programs, and I have a question regarding drinking water. In your written comment, you cited

California's experience where the outdoor heat standard was revised to specify that drinking water be suitably cool and clean and require employers to provide single use cups. Can you provide more detail as to why those revisions were made to the California standard? Thank you.

DR. RILEY: Those revisions were made, I believe, in 2014. And in large part, those revisions were implemented because inspectors were finding that, in certain industries and certain parts of the state, the -- the drinking water simply wasn't potable. To -- to simply have a requirement that water be provided wasn't enough to ensure that the water was -- you know, was something that workers either could drink or would want to drink. So it was a -- I think that was an important tweak, to make really clear that water needs to be cool, it needs to be drinkable, it needs to be free of charge. That level of specificity, I think, has really helped to ensure that water that's provided at work sites is -- is actually accessible to workers.

MS. WANGDAHL: Okay. I'd like to go to Tiffany DeFoe, who's participating virtually.

MS. DEFOE: Hi. This is Tiffany DeFoe with the Directorate of Standards and Guidance, OSHA. So I'd like to ask you to provide some insight, if you can. I'm going to go back in time a little bit to a paper that you coauthored in 2012. That's "From Agricultural Fields to Urban Asphalt: The Role of Worker Education to Promote California's Heat Illness Prevention Standard." So in that paper, part of the discussion was about -- about the difficulty that seemed to be prevalent at the time with enforcing some aspects of the heat rule at that time.

And my question is -- my question is going to get into the area of rest breaks. And the paper mentioned that, due to a combination of factors which included the limited enforcement personnel and resources available within the state and also worker populations, who at that point did not have much understanding of what their protections were supposed to be, or how to report and provide supporting information about compliance violations to the state. And you mentioned some other issues as well, such as piece rate and et cetera.

But in the paper, you discussed about how the educational process helped to help workers to understand what their rights were and how to advocate for them. And also, if I understood correctly, allowed for advocacy organizations to also collect information and provide it to the state. And I wanted to ask, once those important interventions have been made, what was your experience of how California's requirement for as-needed rest breaks, rest breaks, you know, requested by the worker when they feel a need to prevent overheating -- what was your experience of what compliance was like and enforcement was like once there were was like information flowing from workers and from worker advocacy organizations to the state about violations. Did that improve?

DR. RILEY: Are you asking specifically about rest breaks or more generally around compliance?

MS. DEFOE: Yes. No, very specifically about -- about the as-needed rest breaks and -- and what your experience was with enforcement and compliance of the rest breaks, once there was information that workers understood it and there were routes for them to -- to

alert the state to compliance issues.

DR. RILEY: So I will say I'm not -- I'm not sure I have a good enough understanding specifically around the issue of rest breaks. But I will say, in a more general way, that the widespread education that's been done here in the state and, as you also mentioned, sort of the involvement of -- of worker organizations on the ground who can help to serve as -- as -- essentially to sort of serve as eyes and ears and to help alert state officials when there may be violations has been really effective. You know, and that's -- that's -- that's in terms of compliance with all the aspects of the standard, not necessarily the rest break provision, but provision of water, you know, accessibility of shade, training requirements, planning requirements, emergency response procedures.

If -- I would have to go back and look specifically if I -- if there's specific information about the rest break component per se. But I do think, in a more general way, you know, having -- having good educational materials that are in language, that are easy to follow, that are accessible to workers, and

having support, in some cases from organizations on the ground, has been really critical in helping to -- to ensure that there's -- there's widespread you know, recognition and compliance with that -- with those laws.

MS. DEFOE: Thank you very much. Yeah, I really appreciated that takeaway from your paper. As you are probably aware, the proposed language for the initial heat trigger for rest breaks there is fairly similar to the sort of allowed and encouraged rest breaks language of California's standard. So I'm just trying to see what insight might be available on kind of how enforcement has gone with that language, which depends on workers to ask for breaks and -- and employers to educate them. Just how has that been working out? Has it been enforceable?

DR. RILEY: Yeah.

MS. DEFOE: That'd be appreciated. Thank you.

DR. RILEY: If I could just respond to one thing there, which is that -- you know, I think in our -- in the case of our outdoor standard, one really important tool has been the fact that you -- you know, it's

somewhat easy to find the local heat and humidity conditions on a smartphone app. You know, it may not be -- it's not a wet bulb globe temperature, but it's a really sort of an initial useful tool for workers and supervisors to understand when those trigger temperatures have been reached. And that's something we've really promoted a lot, making sure that, you know, both workers and supervisors use that as an initial way to determine, you know, is today going to be a hot day, is it going to exceed those triggers and -- and require additional measures.

And I think you'll hear later today, our program is also working with some additional colleagues here at UCLA to sort of test out a similar model with some of the sort of handheld devices for heat and humidity that could be used in indoor settings, now that we have a new indoor standard. So they're looking at tools there as well. I know you all had had some earlier conversations about wet bulb globe temperature devices. But it's been -- it's been something we're also looking at and happy to share our results from that -- from that work as well.

MS. DEFOE: Thank you. Thanks for your testimony. That's all I have.

MS. WANGDAHL: Thank you, Mr. Riley. We have a few more questions on the economic analysis from Joo-Hyung Shin.

MS. SHIN: Hi. This is Joo-Hyung Shin from OSHA. My first question is about the buddy system. So based on your experience with worker and employer groups, OSHA would appreciate any information you may have on the observation of workers for signs and symptoms of heat illness using a buddy system. We are specifically interested how long and frequent the interactions to evaluate a buddy might take on average. And just to add on, we are also interested in any information on the current use of this buddy system for other non-heat safety-related contexts, as well, as currently happening in workplaces.

DR. RILEY: I can gather some more information to provide you post - post-testimony. I will echo the comments, the sentiments of the last speaker, Dr. Sokas, in that in our experience, it's actually been very easy to train workers on signs and symptoms for --

for heat illness. I think it's been generally a really easy, sort of an easy strategy. We found that to be fairly effective. And there's - there's really good tools that ourselves and our colleagues here in California have developed around those particular things. In terms of the frequency of check-ins, of buddy systems, I can get more information and provide to you.

MS. SHIN: Thank you. My next question is about emergency response. So in your experience, what are the most common methods that employers are already using to prepare for and respond to heat emergencies at workplaces?

DR. RILEY: Well, I think -- I mean, training is certainly one. You know, I mean, that's required in our standard. So training folks on, you know, what the heat -- high heat provisions may be, what the emergency measures may be, if -- if someone develops heat illness. Certainly widespread use of some of those tools as well to -- you know, to identify when you have a heat wave coming or to identify when you may have a work site that exceeds some of those triggers. I think

those are at least two things that come to my mind immediately.

MS. SHIN: Just a follow-up question. So when -- when it comes to like emergency response for -- to address heat emergencies at workplaces, we have heard about like tub immersions and et cetera. So like those procedures require some ice being available at those sites. So we were curious, in your experience, is it common for employers to have a method to store ice at the work site, such as through ice makers or freezers for fixed locations? Or is there like a central location that employers utilize now to store ice so that they're available for mobile employees?

DR. RILEY: Personally, I haven't seen that. But -- but it's not to say it doesn't exist. I don't necessarily feel qualified to -- to talk specifically on that issue of ice baths.

MS. SHIN: But yes, any further information you may have in post-hearing comments would be appreciated. Thank you.

DR. RILEY: Thanks.

MS. WANGDAHL: Okay. We'd like to go to Zoe

Petropoulos, who's participating virtually.

MS. PETROPOULOS: Hey, this is Zoe Petropoulos with the Directorate of Standards and Guidance. I wanted to follow up on something you said in response to a question Tiffany asked. And you mentioned that heat stress apps allowed, not just supervisors, but workers to know whether it'll be a hot day and whether the triggers will be exceeded. And you know, correct me if this is misinterpreting it, but you seem to suggest that there's a benefit to workers having access to and knowledge of what the conditions at their work site are like. And you know, correct me if you disagree with that premise.

DR. RILEY: Oh, no. Absolutely, absolutely. I mean, it's - it's - in my mind, it's - it's - it's analogous to the fundamental sort of the right-to-know principle that underlies our Hazcom and other standards. I mean, it's access to information about hazards that workers may encounter at work. And by extension, you know, in a place like California, especially, understanding what employer measures - what measures employers are required to take to protect

workers at that point.

MS. PETROPOULOS: Got it. I'm wondering if you could speak to then in -- in the context of kind of what you just said, if you see any issues with certain monitoring approaches, if there are approaches that maybe hinder workers' ability to have access to that information. If you're aware of any of instances like that or if you have any thoughts on that. I'm thinking of specifically monitoring devices, if, you know, they're set up in ways that workers are not involved or if the readings and the values are not communicated in a way that's -- that's understandable to a nontechnical audience. I'm wondering if you have thoughts on that?

DR. RILEY: Yeah. I mean, I -- I think with the outdoor -- you know, in an outdoor setting, it's a little bit easier because you do have GPS based tools. So there's -- there's a little bit of an easier way to make sure that workers know how to use an app and can -- can read the temperature and humidity that day. And you know, through training, we -- we often will sort of not only teach workers how to do that, but also you can use that as a strategy to kind of test it

against maybe what the -- what the employer's official reading might be.

In indoor settings, it's a little more complicated, right? Because then you're dealing with things like radiant heat. You're not going to be able to sort of use an ambient temperature app to deal with that. So that's where I think it becomes a little bit more sophisticated. And we -- because our indoor standard is relatively new, I would say we don't necessarily have enough experience yet to really understand how that will play itself out and how we can best get tools to frontline workers, so they can be doing some of that data collection on their own, as a way to also confirm what readings an employer might be -- might be providing. So that's where some of the work we're doing now to test the feasibility of some of those handheld devices, I think is going to be really important.

MS. PETROPOULOS: Got it. And yeah, if you have any additional thoughts you wish to share or data that you have that you can share from your -- your work on this topic, we would welcome them in post-hearing

comments.

DR. RILEY: Great.

MS. WANGDAHL: Mr. Riley, we look forward to receiving any comments you might have, and we thank you for your time and testimony today. And Your Honor, that concludes questions for from OSHA.

JUDGE FORT: Does the Solicitor of Labor have any questions?

MS. WILES: Thank you, Your Honor. Linda Wiles from the Solicitor's Office. I don't have any additional questions. Thank you again for your time and testimony today.

JUDGE FORT: Do we have any questions from participants?

MS. CARLON: Yes, Your Honor. We have one from Mr. Barab.

MR. BARAB: Thank you, Your Honor. My name is Jordan Barab. A couple of questions. Mr. Riley, LOSH operates mostly in Southern California. You've had a lot of contact with workers and heard a lot of their experiences at work. Is that correct?

DR. RILEY: Yes. Yes, that's right.

MR. BARAB: Okay. From your experience, are workers more or less likely to take breaks if they are not paid?

DR. RILEY: Workers are strongly discouraged from taking breaks if they are not paid breaks.

MR. BARAB: Okay. Thank you. You work with a lot of small businesses?

DR. RILEY: Correct.

MR. BARAB: Do you have any reason to think that for some reason small business employees are less vulnerable to heat than employees of larger businesses?

DR. RILEY: No. No. I mean, I think that would be -- the business size is -- is not the important factor here. It's -- it's --

MR. BARAB: So is there any reason that you think that small businesses should be exempted from any kind of standard?

DR. RILEY: No. No.

MR. BARAB: Southern California has a lot of warehouses, right?

DR. RILEY: Correct.

MR. BARAB: The Nevada standard actually exempts

from a lot of -- several features in the -- in the standard, employees who are unloading or loading motor vehicles. Do you see any reason for that? And what -- what kind of work do you know people loading and unloading motor vehicles do in the -- in the heat?

DR. RILEY: Well, I -- again, I'm not an expert in that particular field, but I don't necessarily see a reason to exclude those kinds of activities. It seems like those activities are going to be -- are going to provide the same kind of heat exposures as -- as -- as any other kind of work.

MR. BARAB: Okay. Thank you. That's -- that's -- those are the only questions I have.

JUDGE FORT: Thank you. And thank you, Speaker Riley. Do we want to take a short break? You folks need a break?

MS. WANGDAHL: Yes, Your Honor. That would be appreciated.

JUDGE FORT: Okay. Let's take a ten minute break. We'll be back at 57 after the hour.

MS. WANGDAHL: Thank you.

(Break.)

JUDGE FORT: Welcome back, everyone. Thank you.

MS. CARLON: All right. Our next speaker is Shauna Junco. Please state your name and affiliation for the record.

DR. JUNCO: Hi. My name is Shauna Junco. I'm here as a private citizen and a clinician in Orlando, Florida.

JUDGE FORT: Thank you. You may begin.

DR. JUNCO: Thank you for having me here today to express my full support of the proposed OSHA standards to protect workers from occupational heat-related illness. As a clinician working in the State of Florida, which has no protections in place for occupational heat exposure at the state level and which has outlawed protections at the local level, these protections are crucial to the safety and resiliency of my patients, community, and workplace.

Opponents of the standard have argued that these rules are a one-size-fits-all approach and therefore should not be implemented. But these rules were thoughtfully designed to apply to only those at risk and in a way that protects all workers who are at risk.

Heat protections that trigger at specific heat exposures, such as the proposed OSHA standard, are an optimal design. People will be protected when they are at risk of heat illness, no matter if they are working Washington State, which experienced a devastating 120-degrees high during a recent heat wave, or in my state of Florida, which consistently ranks as having the highest or second highest number of heat-related emergency department visits in the country.

As heat becomes more severe in states like mine, and as unseasonal heat waves become more common everywhere in the country, federal protections have never been more important. The OSHA rules are comprehensive and will be effective because they implement principles proven to prevent heat illness. They will provide a critical acclimation period for people newly working in the heat. The standards then help make sure people are provided water, rest, and breaks from the heat.

Treating heat illness is also simple, although best avoided through prevention. Communication and education aspects of the OSHA standard will ensure

employers and employees know what the symptoms of heat illness are so that it can be recognized, monitored, and promptly treated like the emergency it is.

My additional recommendation is to add a requirement for remote workplaces, or all workplaces, to have minimal, inexpensive equipment on hand to provide first aid to people suffering from extreme - extreme heat illness. This includes a temporal thermometer, ice and water, and a waterproof body-sized bag or other portable container that can be used for an ice bath. These are inexpensive, widely available, and easily stored.

I have heard arguments that these standards constitute federal overreach on the grounds they are overreaching states' power and are placing unnecessary burdens on businesses. In regards to states' power, I would ask that people look at what happened last year in my home state of Florida. Businesses and legislatures there said they did not want a patchwork of regulations and outlawed localities from taking a local-level approach. They enacted no state-level protections then and failed to again this year. People

in my state died preventable deaths. Federal regulations would protect people and solve this, quote, unquote, "patchwork" problem.

These rules do not place unnecessary burdens on employers. Employees are dying preventable deaths because of unsafe working conditions. Not only are these rules necessary for employees, they will also protect employers. For anyone who states otherwise, I ask them again to look to Florida. When looking at the cases of the people who have died from heat while working in my state, the simple and inexpensive measures outlined in the proposed standard would have protected these workers and their employers. That's because these businesses, which did not have a clear heat standard to follow in Florida, were still fined tens of thousands of dollars for failing to provide heat illness protections under the general safety clause.

Some people argue that these rules would be cost prohibitive to businesses. But this small investment will directly benefit employers, not just by protecting them from large fines. The human body needs rest and

water to recover from the heat. When it gets it, people can work longer hours and take less time off, resulting in a more productive and reliable workforce. These small investments by employers will also prevent the huge costs patients, hospitals, and taxpayers are paying to treat emergent heat illness and the many chronic health conditions heat illness causes.

Tragically, we have seen over and over again that without these science-based standards, these simple, inexpensive protective and treatment measures are not put into place, and people die preventable deaths. These deaths are undercounted, as found in the Tampa Bay Times investigation last year, that found that Florida companies failed to report the majority of heat fatalities in my state to OSHA as required.

Occupational heat illness is also placing a huge burden on our health systems and taxpayers, both acutely and through the treatment of the long-term health consequences of health illness, which make it harder to treat other diseases, including severe infections in my specialty area of practice of infectious diseases.

As programs that decrease greenhouse gas pollution are cut, and the heat steadily rises, we need protection rules in this country more than ever. My sincerest thanks to OSHA for posing such well-thought-out criteria to protect our workers, our employers, our taxpayers, and our health system.

JUDGE FORT: Thank you, Speaker. Are there any questions from OSHA?

MS. WANGDAHL: Thank you, Your Honor. This is Amy Wangdahl with OSHA's Directorate of Standards and Guidance. And we do have a few questions for Ms. Junco. As a reminder, you can answer now or you can submit your responses as a post-hearing comment. I'd like to turn it over to Zoe Petropoulos, who has a question on identifying heat hazards.

MS. PETROPOULOS: Yes. I actually have two questions. So I'll start with one that you may have heard me ask other witnesses. So we've heard from multiple now medical professionals and surveillance experts, both last week and today, that they believe that non-fatal, heat-related illnesses and injuries among workers are undercounted in official

administrative and surveillance datasets. I'm wondering if you agree with this, and why or why not?

DR. JUNCO: Yes. I absolutely agree with that. Heat illness is insidious. It causes a lot of health conditions. It can acutely exacerbate existing health conditions. And when medical professionals see those patients, they don't always think, what are the conditions outside or that the patient was in when they started experiencing acute symptoms of a syndrome that they were trying to diagnose. So rather than calling it heat illness, they might call it a myocardial infarction. They might call it acute kidney injury or acute renal failure. And with consistent exposures and acute kidney injuries, that can result in chronic renal failure. So it's well established in the medical community that this is underreported.

Additionally, just based on personal experience with friends and colleagues who know people who have experienced heat-related illness, it's sometimes diagnosed outside of a clinic or a hospital. So if somebody gets out of the heat and into air-conditioning and cools down, and their symptoms start to resolve,

people -- especially, I think, occupational heat exposure in fields like agriculture and construction, they don't want to pay for medical care because a lot of times, they can't afford it. Especially something -- especially when it's going to be something that they think they might be able to get through on their own. But that doesn't mean that they're not experiencing long-term health consequences from those acute events.

I have a friend whose child had heat illness at school, and she was diagnosed by her pediatrician over the phone. But since the child was feeling better, that was never counted in an ICD code or in the child's medical history as heat illness. And we know that is happening with our workers, for sure. So I think it's very well established in the medical community that this is underdocumented. And when you talk about chronic medical conditions that result, that is definitely underdocumented as well.

And as mentioned in my testimony, we also know that it's underreported by employers, at least in the State of Florida.

MS. PETROPOULOS: Thank you. My next question is about the written comment that you submitted on the proposal. You wrote in that comment that, quote, "OSHA needs to decide on one heat metric, heat index or wet bulb". Can you clarify why you think OSHA should allow only one heat metric to be used by employers?

DR. JUNCO: Well, I think that it's just more clear. I think that if you -- I think that -- I guess, I think that it should just be something that OSHA evaluates what is something that is doable. The wet globe is a little bit of a better tool, I would say, because it accounts for things like direct sunlight. But I'm not sure that all employers will be able to readily establish that at their worksite. So I think if that's found to be the case by OSHA that a heat index is still a really good marker, and it's widely available -- and I think it's probably also more easily available to workers, as mentioned in some of the previous testimony today.

MS. PETROPOULOS: Thank you. That's it for me, Amy.

MS. WANGDAHL: Okay. Thank you. We'd like to go

to Jason Hammer, who is participating virtually.

MR. HAMMER: Hi. Jason Hammer with the Directorate of Standards and Guidance. Thank you for your testimony. Your written comment references an online article on strategies for rapid cooling in exertional heat stroke patients. And you state that, quote, "EMS responders providing this method in localities and states across the country have seen reductions in morbidity and mortality of heat illness". Are you referencing specific data or literature here? And if so, could you share those in post-hearing comments?

DR. JUNCO: I will evaluate what's available and submit it in post-hearing comments. I have attended webinars put on by Maricopa County Emergency Response, and also some different counties in the country that have done this, where they're implementing something called treat and then transport; so treating heat illness at the site when they reach the patient, rather than transporting them to an emergency department to then treat them.

And according to the people that I have reached

out to who have started this method, this has -- they've seen people survive with core body temperatures that they had never seen survive when they were transporting them to the hospital first. So I'll also submit the information that is available in post-hearing comments. But that's where -- where that statement came from.

MR. HAMMER: Thank you. We appreciate it. That's it for me.

DR. JUNCO: I would also add that, just if you look at the physics of cooling, using an ice bath is going to be much more effective at rapidly reducing body temperature compared to something like the tarp method, and really doesn't require any additional equipment. It just requires slightly different equipment. Instead of a tarp, you use a waterproof body bag, and these are widely available and very inexpensive.

MR. HAMMER: Thank you. Thanks, Amy.

MS. WANGDAHL: Ms. Junco, we'd appreciate any comments that you'd like to submit as your post-hearing testimony. And we appreciate your time and attendance

today.

And Your Honor, that concludes questions from OSHA.

JUDGE FORT: Thank you. Does the Solicitor of Labor have any questions?

MS. WILES: Thank you, Your Honor. Linda Wiles from the Solicitor's Office. I don't have any questions, but I thank you very much, Ms. Junco, for your time and testimony.

DR. JUNCO: Thank you.

JUDGE FORT: Thank you. Do we have any participant questions?

MS. CARLON: We do not, Your Honor.

JUDGE FORT: Thank you. Thank you, Speaker Junco. I appreciate it.

DR. JUNCO: Thank you.

MS. CARLON: The next speaker is Scott Schneider. Please state your name and affiliation for the record.

JUDGE FORT: Speaker Schneider, I think that you are on mute, or I can't hear you for some reason.

MR. SCHNEIDER: Sorry. Thank you.

JUDGE FORT: There you go.

MR. SCHNEIDER: My name is Scott Schneider, and I'm retired. I'm an industrial hygienist. I retired about -- after about 40 years of working in the labor movement, most recently as the Director of Occupational Safety and Health for the Laborers' Health and Safety Fund of North America. Since I retired, I have worked with the states of Maryland and Virginia in developing their heat standards, and served on the ANSI A10.50 committee, which developed their 19 -- or 2024 standard on heat stress in construction.

I want to start by reminding OSHA that the standards it sets have to protect all American workers from material health impairment, even if exposed to the hazard for their working lifetime. This proposed rule is a good starting point, but it needs to be strengthened to meet that test. The industry has complained that this standard is one-size-fits-all and provides employers with no flexibility. This is false. This proposal contains options, like exempting from acclimatization those who have worked in similar conditions in the past two weeks.

Industry has argued that there needs to be

geographic variation in these requirements. The proposal already includes this flexibility. If you're working in a state or location where temperatures and humidity are lower or heat exposures are temporary, then the requirements don't apply. California has temperature triggers -- has a temperature trigger that applies statewide, despite the huge geographic variation from Death Valley to Mount Shasta.

Industry claims that workers in hot, humid locations are already adapted to the heat. If that were true, then heat-related deaths would not be higher in those states. Yet, we've heard testimony earlier that heat-related deaths on the job and the rate of heat deaths is higher in hotter, more humid states.

Industry argues that without any evidence or scientific support, that the 80-degree trigger is too low. Yet, the initial trigger does not require the more strict precautions, like rest -- like rest-break schedules, and are only -- which are only required at the high heat trigger of 90. All employers use some sort of trigger to decide when to use -- institute precautions. This standard just makes them uniform and

based on actual science rather than guesswork.

OSHA's standards are bare minimums, a baseline that all employers must follow. Even though the courts have said standards can be, quote, "technology forcing", OSHA standards rarely push employers to make changes that are not already widely adopted.

Most OSHA standards are programmatic and give employers a lot of flexibility on how to meet those objectives. For examples, employers could comply with the heat stress standard by starting work earlier in the day and avoiding most of the requirements. Small businesses are often exempt or given breaks on compliance. Employers can also get flexibility from compliance officers on how to meet those standards.

Lastly, most employers want to know exactly what they have to do in order to comply and avoid potential liability and citations, even though the risk of inspection is low because of the inadequate inspection force. The Nevada standard, which industry has pointed to as a model, is vague and unenforceable. What standard should be used in doing a JHA to determine whether precautions are needed? What are the

qualifications needed to perform a JHA? How often would the JHA have to be updated? What about the time and cost and paperwork burden of doing JHAs?

Most small employers do not have the expertise or staff to make such decisions. If the goal is a safe outcome -- for example, no heat-related deaths or illnesses -- does that mean that employer can only be cited after the fact? That would make the standard reactive rather than preventative and provide employers with an incentive to further undercount these illnesses.

While employer associations claim they want vague standards that give maximum flexibility, what they're really requesting is unenforceable standards. If a standard did not have triggers, when would an employer know the standard needs to be implemented? Setting a trigger actually benefits many employers since if they're under the trigger, they can be confident they're exempt from the requirements.

Rest break schedules are necessary to eliminate the uncertainty of a vague requirement. Workers may continue to work, even when feeling sick because of

production pressures or because breaks are unpaid. Rest break schedules have been set by NIOSH, the Army Corps of Engineers, and many others because they provide certainty, as well as worker protection.

Acclimatization schedules protect workers and are needed since it's clear from the data that most fatalities occur in the first few days on the job. Specifications on the quantity of drinking water are needed since thirst is not a good indicator of the need to hydrate. Specifications save lives and prevent injury and illness.

While we tend to focus on the number of fatalities a standard can prevent, it's important to remember there are many more illnesses that occur, though they are dramatically undercounted. We shouldn't discount them, particularly as heat exposure and illness has a significant impact on productivity -- 30- to 35-percent reductions according to the Flouris paper in 2018. Implementing heat standard protections will not just prevent illnesses and injuries. It will help the bottom line. Working in heat causes fatigue and has dramatic effect on worker productivity. It can also

cause mental confusion and increase risk of injury -- of reg -- of other injuries. Giving a rest break and water restores workers' ability to work.

While the proposed standard is much -- is better than most of the state standards, it falls short of being truly protective. There are much better models. In 2024, ASSP and ANSI approved a new heat standard for construction. It contains many more specifications and requires the use of a wet bulb globe temperature, WBGT. OSHA was on the A10 committee, which approved this consensus standard. And the committee was one-third employer reps, yet it was overwhelmingly approved.

The 2016 revised NIOSH criteria document is also much more productive and comprehensive. And this year, ACGIH published a guidance document entitled, "A Guide for the Control of Heat Stress and Strain." All three documents are science-based and contain the latest recommendations for protecting workers from exposure to heat. These recommendations and consensus standards point to a much more protective approach than the current proposal.

Most importantly, they require the use of the

WBGT, which includes the significant influence of radiant heat exposures on heat load. They also include factors to account for the impact of impermeable clothing, which reduces the ability to sweat, and workload, which can significantly increase risk of heat stress.

Workload has even been raised by industries as significant -- as a significant factor in determining heat load on the body. In construction, for example, where I have had the most experience, metabolic heat from work adds significantly to heat load. So in the ANSI A10.50 standard, we made the assumption that workers were working under heavy conditions to adjust the precautions for metabolic heat.

Other elements of these model rules that need to be considered by OSHA are the provision of electrolytes and implementation of preventive measures in accordance with the hierarchy of controls. Protecting every worker in America from material health impairment requires a much more protective approach, such as that laid out in the A10.50, NIOSH, and ACGIH standards.

Thank you for your attention. I look forward to

your questions.

JUDGE FORT: Thank you, Speaker Schneider.

Are there questions from OSHA?

MS. WANGDAHL: Thank you, Your Honor. This is Amy Wangdahl in OSHA's Directorate of Standards and Guidance. And we do have a few questions. I'm going to start with a few and then pass it off to my colleagues.

Mr. Schneider, we've heard from multiple witnesses during this hearing that have recommended that OSHA should take an approach similar to that of the Nevada standard, which as you mentioned, does not set any triggers that would require employers to conduct job hazard analysis, or JHA. So I have a few questions related to that.

In your experience, can you discuss the process for conducting an effective JHA and the components that OSHA should include in a heat standard if the agency were to require a JHA?

MR. SCHNEIDER: Wow. Okay. Well, in construction, JHAs are common practice. But they have to be done by knowledgeable people and they have to

consider all the risk factors that people are exposed to. So if you're doing a JHA for a particular job or task, you need to figure out, well, at what point is -- does this hazard represent a risk to employees and tell them what they need to do to mitigate that risk. I think, you know, JHAs are often done in construction by what they call competent persons, people who not only are knowledgeable about the hazards, knowledgeable about the standards, and have the authority to stop work if there's a -- if there's an issue or a problem.

So I think the problem with JHAs are, is that, you know, you need, I think, a uniform standard based on -- on the scientific studies that have been done on this risk so that everybody is protected. If you're doing a JHA, you say, well, is there a risk or isn't there a risk. That can't be a decision that's left up to individuals from one worksite to another. They -- we can't have it that -- that loose and vague so that workers on one site might be protected at a certain temperature and other site might be protected at a different temperature. So I think the JHA approach, although I support JHAs and I think JHAs can be useful,

particularly when looking at hazards that people may not be aware of like ergonomic hazards, I think it needs to be uniform and protective.

MS. WANGDAHL: Okay. And do you believe that personnel would be required to have specialized training before doing a JHA? And if so, what do you think would be included in that training?

MR. SCHNEIDER: Yeah, I do think they would need specialized training. And I think I make the analogy to the competent person in construction. And there are competent persons in construction in many OSHA standards. And that's why -- and that's why I liken the -- the heat -- the heat stress monitor that use -- or I forget the name -- the actual name of the individual in your draft standard. But I liken that to a competent person, somebody who -- who knows all about the hazards, knows all about the mitigation methods, knows what to look for, knows the medical issues that can arise, signs and symptoms, knows how to -- how to treat illnesses and for emergency response. And so I do think they'd need specialized training in order to perform a JHA. Yes.

MS. WANGDAHL: Okay. I know you touched on this, but I just wanted to ask one more time; do you agree that OSHA should take an approach similar to Nevada, and why or why not?

MR. SCHNEIDER: Yeah. Absolutely not. I -- as I said, I think the standard is unenforceable because, you know, how does OSHA come in and issue a citation for somebody that's doing an inadequate job, saying, well, we did a JHA, and it says that there's not a problem. Or -- but the JHA may be inadequate or based on inadequate standards. I just don't -- I just don't see how -- how OSHA is going to enforce that until after the fact, after somebody has already experienced a heat-related death or illness. And then OSHA would come in and say well, obviously, whatever you did wasn't working properly. I don't -- I don't see how that approach is going to work.

And I do think it's going to be a much higher burden on employers, particularly small employers who don't have the expertise. And I know OSHA gets attacked a lot for requiring paperwork. But I think doing JHAs is going to require much, much more

paperwork than under this draft proposal.

MS. WANGDAHL: Okay. We've received numerous comments and heard from many groups testifying during this hearing that OSHA should adopt a more performance-oriented standard rather than specifying when and how control measures must be implemented. Either today or in your post-hearing comments, can you provide your thoughts on how such performance-oriented approach could be, including any specific recommendations on how OSHA could structure a performance-oriented statement?

MR. SCHNEIDER: (Coughs.) Sorry.

MS. WANGDAHL: And again, either today or in post-hearing comments, if you had any suggestions in this performance-oriented language so that we are able to provide more flexibility, but ensures that employers are providing the protection that we are looking for.

MR. SCHNEIDER: Okay. Yeah. I don't think a performance - making the standard more performance-oriented is going to provide the protection that's needed because essentially, you're saying a performance-oriented standard gives employers a lot more leeway as to how to protect workers but doesn't

tell them - doesn't tell them exactly how. And we know - we know from the scientific literature, for example, at what temperatures people are at risk. So if we give people flexibility and say, well, you can start protections at whatever temperature you believe is dangerous, then people are not going to be protected.

And as I said, I think my experience has been, particularly with small employers, they want certainty. They want to know what do I need to do to avoid a citation, as well as protect my employees. And a performance-oriented standard doesn't tell them that. It tells them -- I mean, we have a performance-oriented standard already. It's called the general duty clause. And it's not -- it hasn't been working. It hasn't prevented any of these -- a lot of these heat-related illnesses and injuries. So I don't -- I don't -- people know that they're supposed to protect people from the heat. It's a well-recognized hazard. We have a lot of guidance out there. But have it -- not having a specification standard is not really protecting workers.

MS. WANGDAHL: Can you discuss from your experience what data would generally be necessary for an employer to show that their plan is meeting performance objectives?

MR. SCHNEIDER: I don't know the answer to that. I really don't. I don't see how -- I don't see how they're going to do it. If they're -- I mean, I think what would happen under a performance standard is they would hopefully have some sort of written plan, and OSHA would come in and look at their plan and say, well, this covers all the bases and -- and then decide whether or not to issue a citation and look at their OSHA logs and decide whether -- see if there are any illnesses. But as I mentioned, I think it would be an added incentive to undercount illnesses and injuries.

MS. WANGDAHL: Okay. Thank you. We're going to go to Zoe Petropoulos, who is participating virtually.

MS. PETROPOULOS: Hi. This is Zoe Petropoulos with the Directorate of Standards and Guidance. I just have a couple questions for you about the NIOSH Recommended Alert Limits and Exposure Limits and the ACGIH TLV and action limit for heat stress. So are you

familiar with either or both of these?

MR. SCHNEIDER: I have some familiarity with them. Yes.

MS. PETROPOULOS: Okay. I am wondering -- my first question; are you aware of employers that currently use either of these methods to assess heat stress in their workplace?

MR. SCHNEIDER: I -- I can't -- I don't have an answer to that. I'm not aware of it. No.

MS. PETROPOULOS: Okay.

MR. SCHNEIDER: But I'm sure some do.

MS. PETROPOULOS: Okay. If you become aware of any examples or data, we would welcome those in post-hearing comments. And we're particularly interested, I'll add, just in examples from small businesses and/or employers who may not have an industrial hygienist on staff.

MR. SCHNEIDER: Yeah. You know, the NIOSH standard was revised almost ten years ago. And you know, and the criteria documents that they publish were designed to be a model for OSHA to follow in actually regulating these hazards. That's how criteria

documents came about 50 years ago. So I think it's incumbent upon OSHA to look at those very closely and as much as possible, follow their -- follow those draft standards.

MS. PETROPOULOS: Thank you. My second follow-up question; are you aware of any adjustments that either NIOSH or ACGIH provide for accounting for geography in their formulas?

MR. SCHNEIDER: I don't -- I don't think there are any geographic adjustments. And I don't really understand this whole push for geographic adjustments. I mean, my sister lives in Tucson where it's over 100 degrees many, many days during the year. And yet, she spends all of her day inside an air-conditioned environment. She is definitely not acclimated to living in Tucson, no matter the -- despite the fact she's been there 15 years. So I don't really understand -- I don't think it makes any sense to do geographic adjustments. I think it would be enormously complex for OSHA to enforce and to set those.

MS. PETROPOULOS: Thank you.

And that's it for me, Amy.

MS. WANGDAHL: Okay. Thank you. We'll turn to Joo-Hyung Shin with a few questions for you, Mr. Schneider.

MS. SHIN: Hi. This is Joo-Hyung Shin from OSHA. My first question is about the buddy system. So based on your experience as an industrial hygienist, OSHA would appreciate any information you have on the observation of workers for signs and symptoms of heat illness using a buddy system, specifically for example, on the average lengths of these interactions to evaluate a buddy. And we are also interested in any information you have on the current use of this kind of buddy system for other non-heat-related reasons across different industries.

MR. SCHNEIDER: Yeah. I mean, I think buddy systems are -- are actually common in construction, not for -- not for all hazards, but -- but people -- most -- I mean, there are workers that -- that are lone workers in construction, particularly for emergency operations and utility work, et cetera. But for many many operations in construction people work together, they work as a team, and they work -- like, you know,

drywallers, they may be one person moving the drywall, another -- another screwing it into the wall, another taping it.

So -- and they work together, and they look out for each other. So I think -- I think it's not an alien concept to them. It's something that is -- I think is very workable. And I think having, you know -- whereas workers, you know, may suffer from heat illness and have things like mental confusion or whatever or being fatigued, that's something that they may not notice themselves. But having a worker who's working nearby them observe that and say, "Hey, you need to take a break now", or "We need to get you, you know, more -- more hydrated", et cetera, I think it's very helpful.

And I -- I don't -- I can't speak to exactly, you know, where it's used, but I know that it is used in construction, and we included it as a provision in our ANSI A10.50 standard.

MS. SHIN: Thank you. My next question is about emergency response. So in your experience, what are the most common methods that employers are currently

using to -- to respond to heat emergencies at workplaces?

MR. SCHNEIDER: Yeah. I don't have any information on - on the most common responses. But from what I heard from when we were developing the ANSI 10.50 standard is, you know, there are - there are issues that relate to how soon or how quickly, you know, employers can get an emergency team onto the site, can call 9-1-1, is there cell service. If they're working in a, you know, in a wind farm, which may be in a remote area, it may be quite a ways to get an emergency team there. So they have to have some sort of emergency response available on the site. And that's why we included methods like this tarp method for cooling the body rapidly in our ANSI A10.50 standard because you have to have some sort of emergency response right there on the site, or else the person's going to be at much much higher risk of death.

MS. SHIN: Thank you. Just a follow-up question. So these emergency cooling strategies would normally require some ice storage, like, ice being available on site when the emergency happens? So in your

experience, is it common for employers to have a method to store ice, like, an ice maker, an ice freezer so that is available on-site for fixed - fixed locations, or is ice also made available at a central location for mobile employees?

MR. SCHNEIDER: Yeah. I -- I think there's -- there's several ways to approach this. I mean, I think a lot of these work sites have trailers, you know, particularly for -- for the office personnel, and there can be perhaps ice makers in those trailers. But -- but I think it varies from construction site to construction site. So -- but I don't have any doubt that ice can be made available. We heard testimony last week about road construction and how they make ice available even on -- on, you know, long, you know, highway jobs.

MS. SHIN: Thank you. That's all I have.

MR. SCHNEIDER: Sure.

MS. WANGDAHL: Thank you for your time and testimony, Mr. Schneider. We look forward to any post-hearing comments that you might submit.

And Your Honor, that concludes questions from

OSHA.

JUDGE FORT: Thank you. Are there any questions from the Solicitor of Labor?

MS. WILES: Thank you, Your Honor. Linda Wiles from the Solicitor's Office. I do have one follow-up question about the buddy system. You mentioned that in construction it's common for crews to work together and to monitor one another for hazards and maybe signs and symptoms of heat stress. Do you have any knowledge of experience for remote or solo workers, how employers might be able to monitor or check in with them to ensure that they're in safe, good working conditions, or do you have any recommendations how that could be done?

MR. SCHNEIDER: Yeah. I don't have a lot of personal experience with that. But I know that many of them have, you know, communication channels, either cell phone or walkie-talkies or something to -- to regularly check in with workers. And I think it's -- it's essential because, you know, solo workers that are experiencing heat illness, somebody needs to -- to identify that and get them help as soon as possible.

So I -- I don't know. I think they're -- the companies that do this kind of work, particularly utility companies have worked out all sorts of arrangements to keep in touch with solo workers where it's needed. And it can be done; it is being done. But I don't have enough information as to -- to tell you exactly what's going on out there.

MS. WILES: Thank you very much, Mr. Schneider.

That's it from me, Your Honor.

JUDGE FORT: Thank you. Are there any questions from participants?

MS. CARLON: Yes, Your Honor, we have three. The first is from Mr. Barab.

MR. BARAB: Thank you. And thank you, Scott, for that testimony. So Scott, how many years have you worked in the construction industry or with construction unions and workers?

MR. SCHNEIDER: About 40.

MR. BARAB: Okay. Can you answer a couple questions? When the construction associations were testifying, one of the arguments -- well, they made -- they made an argument basically that construction

industries should be exempted from this standard, or maybe there should be a separate standard for construction workers.

One of the main issues they raised was that compliance with this standard would cause a greater hazard. One of the examples they used was if -- if, you know, workers have water bottles on top of buildings, they might drop them down and hit somebody in the head, or they might be tripping hazards or interfere with personal protective equipment, that coming down for breaks every two hours was more dangerous than -- than not having a break, even in a high-heat area. What -- what is you're feeling about the greater-hazard argument?

MR. SCHNEIDER: Yeah. I think it's spurious. I -- you know, there are a lot of hazards in construction and -- and you know, construction contractors are very creative in how to solve those problems. I mean, look, you have crane operators that have to -- have to climb, you know, ten stories to work in -- in a -- in a tower crane, but they have -- they have all the provisions they need up there to -- they

have a restroom, you know, they have food, they have water, et cetera. And they have communications with the -- with the -- with the base. I think there are -- I don't -- I don't see -- I don't think those arguments really -- really don't hold water, so to speak.

MR. BARAB: Okay, thanks. And there was also an argument against scheduled breaks because you'd have to take the whole crew off or the -- the -- the concrete might harden or all kinds of reasons you can't schedule water breaks for construction workers. What do you think about those arguments?

MR. SCHNEIDER: I think -- you know, there are some -- some operations in construction that -- where there -- where timing is -- is critical. But I think, you know, construction contractors have figured out ways to do this, and they can rotate people in and out of a pour. They can do it at a cooler time of the day. And many of them have to do that because, you know, if it's too hot, that's going to change the consistency of the concrete. So I think -- I think there are ways to accommodate scheduling and -- and I don't -- I don't see that it's a -- it's a major problem.

MR. BARAB: Okay. One more question. A lot of construction companies are very small, right?

MR. SCHNEIDER: 90 percent of them.

MR. BARAB: Yeah. So do you see any reason that small companies, small employers should be exempted from this standard?

MR. SCHNEIDER: No. They -- they -- they experience the same conditions that other large contractors do, you know. I think -- I think we have to make it easy for them to comply with the standard and having a -- a specification standard that tells them exactly what to do and how to do it and providing them with things like templates for heat illness prevention programs and -- and a lot of support. I think they need a lot of compliance assistance to help them. But I think they -- I think leaving it up in the air and vague and having a -- a performance standard that doesn't tell them what they need to do, it's going to be impossible for small employers to comply.

MR. BARAB: Okay. One final question. Do you think just more training and education is sufficient, or do we need a standard?

MR. SCHNEIDER: Well, I think training and education is -- is necessary for every standard. Workers need to know what the hazards are and how to protect themselves, but it's not sufficient. It's not -- it's not equivalent to having a standard in place because the workers don't have control over the workplace, you know. And if they're told, you know, you have to get this job done and -- and yeah, it's hot out, but you have to keep going, they may not even know what their rights are to refuse unsafe work or to stop.

You know, a lot of employers have said in this hearing, well, we let workers take breaks whenever they need to or whenever they want. But that's not been my experience. And I think that's true in some of the -- in some of the sectors, like in the unionized construction sector, it's much truer than it is outside of that. But I think unless you have these -- these -- these rights enshrined in a standard, you're not really going to protect people.

MR. BARAB: Okay. Thank you very much. That's all I have.

MR. SCHNEIDER: Okay.

JUDGE FORT: Next question.

MS. CARLON: The next one is from Mr. Lundegren.

JUDGE FORT: State your name and affiliation.

MR. LUNDEGREN: Yeah. Hey Scott, this is Bruce Lundegren from the Office of Advocacy at the U.S. Small Business Administration. Good to see you.

MR. SCHNEIDER: Hi, Bruce.

MR. LUNDEGREN: And thank you for your regular participation in our Small Business Labor Safety Roundtable that we also always appreciate you attending. I just wanted to follow up on this issue of the small business concerns about flexibility and in more of a performance-oriented standard. Would you object to OSHA including a provision that provides a variance for infeasible, impractical, or creates a greater hazard? That's not an --

MR. SCHNEIDER: Well --

MR. LUNDEGREN: --uncommon provision in an OSHA standard.

MR. SCHNEIDER: Right. Right. I think there are -- there are practicality issues in some cases. It's rare, but I think it's incumbent on the employer

to prove that it's impractical or infeasible.

MR. LUNDEGREN: Okay, thank you. And then also, I wanted to ask you about employee-confounding factors, whether they be from outside activities or prescription drug use, whatever it might be. Do you think that an employee should have some obligation to inform an employer if they have some kind of a confounding factor that would make them more susceptible to heat injury or illness?

MR. SCHNEIDER: No. You know, OSHA's required by law to protect all American workers, even those that may be susceptible. And you know, this was litigated years ago with regard to lead exposure and noise exposure, where people have, you know, outside exposures; you know, they may be, you know, running -- doing racing cars on the weekend and have noise exposure or going to Zumba classes. But still, OSHA has a requirement or an obligation to protect them from these hazards.

And -- and I think, as was laid out in the standard, their -- they have an obligation to inform workers about what the risks are of some of these

potential personal risk factors. But I think -- but there are HIPAA restrictions on what they can and should tell their employers. And I think there is a risk that they may be excluded from employment if they divulge something that the employer says, well, I don't want to take a risk, you know; you're not allowed here. Just like people who were exposed to lead and -- and were told, well, you can't work in our workplace because, you know, because you're pregnant or whatever. I think it's -- I think it's a slippery slope that I would not want to go down.

MR. LUNDEGREN: Okay. And one - and just a quick follow-up. How is the employer supposed to know - you know, I understand your concerns about potential discrimination, but how is an employer supposed to know to be mindful that someone is potentially susceptible, and therefore some precaution needs to be taken?

MR. SCHNEIDER: Well, I think Dr. Sokas laid out some -- a proposal earlier today where she said workers should -- just like they have respirator medical surveillance, get a -- have a -- have a -- a screening as to -- and that the physician who is -- who is --

who, you know, they -- they refer to -- are referred to a physician who then may make a determination that they may be at higher risk if they're exposed to heat. And they can tell the employer perhaps they may need additional precautions. But there's not a -- you know, they -- they can't reveal any diagnoses or any specific conditions that this individual has.

MR. LUNDEGREN: Okay. Thank you, Scott. Good to see you.

And thank you, Your Honor.

JUDGE FORT: Thank you. Next question.

MS. CARLON: The next question is from Ms. Shrestha. Please state your name and affiliation.

MS. SHRESTHA: Hello. This is Ayusha Shrestha from the AFL-CIO. Thank you, Mr. Schneider for your very -- your very informative and impactful testimony. I posed this -- a similar question to Ms. Margaret, but I wanted to ask you the same thing about hierarchy of controls and their importance in controlling for hazards. I wanted to ask why engineering controls are considered more effective than administrative or -- administrative controls or personal protective

equipment in many cases, and I wanted to also ask how that is -- those things in specific to heat hazards.

MR. SCHNEIDER: Okay. Thank you very much. Look, I've been an industrial hygienist for over -- over 40 years, and the hierarchy of controls is integral; it's fundamental to the profession. And what it's saying is basically there's a hierarchy based on how effective these controls are; that where the most -- the most effective thing you can to do prevent somebody from getting -- getting ill or injured from a hazard is to eliminate exposure, okay; and that -- or substitute with a safer chemical or a safer procedure.

And the second thing is having engineering controls. And engineering controls are -- are more -- are not as effective as -- may not be as effective as eliminating the hazard, because the controls may malfunction, for example, and then you're not -- you're exposed to the hazard even though you have a control in place. Or it may not be properly maintained, and we see that many times.

But it's still better than -- than using administrative controls where you rotate -- maybe

rotate workers in and out of a hazard -- hazardous situation, and then you expose more workers to the hazard or relying on personal protective equipment, which is not as protective and can also fail. Like, for example, these cooling cloths that everybody talks about -- or vests -- I mean, they -- the cooling cloths, they lose their -- their -- their coolness, you know, they -- they -- they -- pretty rapidly, and the vests have to get recharged regularly. So they're not as protective as we would like, and that's why we want to -- we want to start at least at the top by elimination, substitution, and engineering controls.

And engineering controls are feasible in a lot of situations and -- and it's only when an engineering control is not feasible that you should then move to the less protective controls like administrative controls. I mean, look, in construction with heat hazards, a lot -- I worked in -- I worked with a lot of the construction unions and the construction employers, for example, on road construction, and there's a lot of road work being done in the U.S., a lot of that's -- more that's needed. And much of it is done at night,

partly because there's less traffic and they're exposed to less traffic hazards, but also because it's cooler there -- cooler in the evening and at night.

So I think -- and a lot of construction companies will start work at -- as soon as it's dawn, like, at 5:30, 6 o'clock in the morning, if possible, and then quit work by -- by 1 o'clock because they -- they don't want to work in the hottest part of the day. And I think we can -- and engineering controls are particularly important for radiant heat because you do have radiant heat sources. Like if you're doing asphalt paving on a roof and you have an asphalt thing for -- for melting asphalt on the roof, people are exposed to that. If you're a boilermaker, they may have to do work in the boiler room and they can -- they can shield it from -- shield some of the radiant heat from the -- so the worker isn't as exposed to that.

And then workload is another adaptation. You can -- you know, resting is -- is a reduction in your workload. Workload produces a lot of metabolic heat, and that's why we included metabolic heat charts to revise the standard -- the A10 standard. Metabolic

workload charts and also charts for protective clothing so you could adjust the triggers based on -- on those -- those factors as well as radiant heat.

MS. SHRESTHA: Thank you. That's all from me. Thank you for that answer, Mr. Schneider.

JUDGE FORT: Thank you, Speaker Schneider.

MR. SCHNEIDER: Thank you.

MS. CARLON: Your Honor, we do have one final question, if we -- if time permits.

MR. GLUCKSMAN: Hi. This is Dan Glucksman with the International Safety Equipment Association.

MR. SCHNEIDER: Hi, Dan.

MR. GLUCKSMAN: And Scott, I wanted to ask you about your comment on PPE and cooling PPE. I mean, do you feel that if cooling PPE is evaluated and considered -- thoughtfully considered by the employer and used, you know, as instructed by the manufacturer, it could be effective?

MR. SCHNEIDER: I -- I -- I think it can help as an -- as an adjunct to other controls. I don't think it's a substitute for them. I mean, look -- look at what's happening --

MR. GLUCKSMAN: Yeah, well, I agree.

MR. SCHNEIDER: I mean, look, I've been doing a lot of work on hearing loss prevention and, you know, people use these earplugs, and they have NRRs that are totally unrealistic or they don't know how to use them properly, and -- and teaching people how to use PPE properly and make sure that it's -- it's used properly and that you have a good program and training is a lot of work. And I -- so I -- I don't -- I don't -- yeah, I mean, we agree. It's not -- it's not a substitute.

MR. GLUCKSMAN: But I agree PPE does have a place in the hierarchy of controls if it is, it's under engineering, substitution, and administrative. But just like hearing protection, it can help to protect the worker.

MR. SCHNEIDER: Yeah. I'm not saying it's not helpful. I'm just saying it's not -- not the solution.

MR. GLUCKSMAN: Thank you very much, and good to see you.

MR. SCHNEIDER: Okay.

JUDGE FORT: All right. Now, thank you, Speaker Schneider.

MR. SCHNEIDER: Thank you.

MS. CARLON: The next speaker is Alejandra Domenzain. Unfortunately, we do not see your name in the attendee list. So if you have joined under another name, please use the raise hand feature to indicate your presence, and if you've called in, please use star three to raise your hand.

(No response.)

MS. CARLON: All right. Moving to our next speaker group. Our next speaker is the UCLA Heat Lab represented by Bharat Venkat, Diego Flores, Natisha Patirupananda, Benjamin Thompson, Elise Whitlinger, Sofia Sabra, and Samantha Chamorro. Unfortunately, we do not see your panel listed in the attendee list. So if you have joined under another name, please use the raise hand feature to indicate your presence, and if you have dialed in, please use star three to raise your hand.

(No response.)

MS. CARLON: Moving onto our next speaker. Our next speaker group is the Rapid Anthropology Consulting Group represented by Rose Jones and Marsha Prior.

Please state your name and affiliation for the record as you move throughout your testimony.

DR. JONES: Thank you. My name is Rose Jones, and I'm the founder of Rapid Anthropology Consulting. It's an organization that I created to drive awareness for policy change at the intersection of extreme heat and public health. By training I'm a medical anthropologist, I spent the early part of my career in academic medicine and the latter part working on front lines of public health, ranging from homelessness to COVID, HIV, pediatric drownings. And one thing I can tell you is in my 30 -- almost 30 years of work, nothing keeps me up at night more than the growing threat that heat poses to human health.

Next slide, please.

My colleague, Dr. Marsha Prior, who will speak after me -- we're both going to focus on Texas, our home state. I'll begin by outlining foundational issues related to heat and climate health, and Dr. Prior will share firsthand data that we've been collecting in Texas from -- from the ground up. Texas is a powerful case study for understanding the urgent

need for federal heat standards and worker protection. It consistently ranks among the hottest states in the country, with heat waves becoming more frequent, more intense, and more dangerous.

Texas also enacted House Bill 2127, known locally as the Death Star Law. It essentially strips cities of the ability to enforce basic life-saving protections for outdoor workers. This included water and shade breaks for -- every four hours for construction workers in Austin and Dallas. Texas also has the largest outdoor labor force in the country, the highest rate of worker mortality, and it remains the deadliest state for Latino workers.

Texas exemplifies what happens when protections are absent, politicized, or dismantled. Millions of workers across our state now face high-heat, high-risk conditions without guarantee to basics, which again include water, shade, and rest.

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The first point that I'd like to emphasize, because it often gets lost in this discourse, is that heat and human health is a relatively young and rapidly

evolving field. We've known for a long time that rising temperatures drive spikes in ER visits and hospital admissions, but emerging research shows that the impact of heat is much more complex, nuanced, systemic, and harmful than we once understood.

And I know you've had a lot of information of the ICD codes and failure to capture some of this data. But I would emphasize that heat is not just limited to heat strokes or heat exhaustion. One recent study found, for example, that different types of heat waves had very distinct effects on different types of heart deaths. Sudden cardiac arrest, heart attacks, and heart failure are especially sensitive to compound heat waves, which means the traditional way in which we've been capturing heat data -- heat waves in particular -- may drastically underestimate these risks.

And at the interest of time, I won't continue with similar studies, but in the very recent past, again, we're continuing to find just how complex and holistic these -- the impact of heat is. Probably one of the more disconcerting and problematic findings is that we're also learning that sustained exposure to even

moderate temperatures can be just as harmful over time. So we don't even need to talk exclusively about extreme heat. The bottom line is that we are still underestimating how deeply heat affects the human body, and it's much more dire than originally thought.

Next slide.

When we factor in heat patterns and heat trends, the outlook for workers becomes even more alarming. Heat is of course becoming more intense, lasting longer, and starting earlier in the year -- in Texas, heat season now routinely extends well into October -- all of which serves to increase the cumulative burden on the body. And we saw this -- in fact, we saw over the weekend with what happened at the graduation ceremony in New Jersey. 150 people who were -- attended an outside graduation became ill from the heat; 50 in the morning, 100 in the evening, 9 were rushed to the hospital. The fire marshal declared this to be a -- classified it as a mass casualty event and a state of emergency was declared. This is the same heat where our workers are laboring without that protection.

Next slide. And the last point that I would like

to make is the importance of microclimates, another point that's often overlooked but critical to discussing heat and worker safety. It's often said that a picture is worth 1,000 words, and here's an example of this. This is a bus shelter in Dallas, and you can see there are different ambient temperatures. Within a very short geographical space, you can see that that temperature is anywhere from 98 to 127 so that means even when in a small space, you can have very different heat exposure. Conditions can -- can vary dramatically, again, within just a few meters.

And I can tell you firsthand in the -- in -- during the summer of 2023, I've spent most of that summer with my team collecting this type of data. And when the ambient temperature showed 105, 106, the reality is that we were capturing data, boots on the ground where workers often are, at temperatures that exceeded 120, 130, and even, 150 degrees.

The bottom line is that workers don't labor in climate averages. They labor in place-specific, often extreme, conditions, and we need policies at the federal lavel -- level rather, that reflect this

reality. I'm going to turn it over to my colleague, Dr. Prior, and she'll share some of the human data that we've been collecting.

Next slide, please.

DR. PRIOR: Thank you, Dr. Jones.

What Dr. Jones and I have realized is that there is a lack of emphasis on human data, which is why we've started an initiative called Texas Tales where we are listening and documenting people's testimonies regarding heat, health, and its wide web of impacts.

Next slide, please.

We cannot unhear what we've been hearing. Extreme heat is not just impacting outdoor workers. It impacts factory, retail, restaurant workers, parents, teachers, nearly all walks of life are affected in some way or another. Last summer, Dr. Jones and I heard testimonials from workers in Houston -- Houston, Texas -- and their statements were quite disturbing, demonstrating the life-threatening conditions they are forced to endure.

We heard from a worker who cleans aircraft cabins while the air-conditioning is turned off, leaving the

cleaning staff in stifling, oven-like conditions, with no air circulation. Many resorted to drinking bottled water that had been left behind by the passengers. Then, after finishing one cabin, they must quickly cross the hot tarmac, on foot, to reach the next plane and start the process all over again.

We also listened to a letter carrier who drives a mail truck without air-conditioning. He described it as feeling like a convection oven. He's recorded interior temperatures between 140 and 170 degrees Fahrenheit, which is not sustainable for even a minimal period of time. Incredibly, he often found relief by stepping out of his truck, even when it's 110 degrees, because the air outside was cooler than what he was experiencing in his vehicle.

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Collecting human data on heat is challenging because workers live in fear of reprisal. Thus, many of our interviewees have chosen to remain anonymous. Workers may lose funding sources, as one of our interviewees noted. They may be reprimanded, punished, or they may lose their job entirely. One woman working

in a factory spoke of the fear she and others experienced when one of their coworkers fainted from the heat.

Workers are required to remain at their stations, and not allowed to turn off any machinery. Thus, they were helpless to assist their coworkers, fearing they would be fired if they left their stations. And we've been hearing some talk about the buddy systems, and clearly the buddy system would not have been effective in an environment such as this, just something to consider.

In conclusion, Texas is a living laboratory, revealing both what fails and what could work. It lays bare the human cost of policy inaction, while also offering a glimpse of the potential for evidence-based solutions. Across the state, researchers and advocates are piloting promising strategies; microclimate monitoring, wearable sensors, early warning systems, and worker-centered education.

But without federal backing, these efforts remain limited in scale and lack the enforceability needed to protect lives. Texas provides both a cautionary tale

and a road map for what national heat standards could, and should, look like. It is not a partisan issue. It affects everyone, and it takes all of us to create effective solutions for the greater good of our nation.

I'd like to end with just one thought that -- one last thought -- that came from a worker who poignantly said, quote, "It's not just about workers. It's about everyone, the family", end quote. When a worker becomes ill or dies from extreme heat, the consequences ripple beyond the jobsite. The emotional toll is profound, but so too is the economic impact of the entire household. It is imperative that we set federal standards. Workers are not expendable resources. They are human beings who deserve respect and protection. Thank you.

JUDGE FORT: Thank you, Speakers.

Do we have questions from OSHA?

MS. WANGDAHL: Thank you, Your Honor. This is Amy Wangdahl with OSHA's Directorate of Standards and Guidance. We do not have any questions for this panel at this time.

I do appreciate Dr. Jones' and Dr. Prior's time

and testimony. If there's anything else that you'd like OSHA to consider, please submit your post-hearing comments.

Thank you, Your Honor.

JUDGE FORT: Thank you. Any questions from the Solicitor of Labor?

MS. WILES: Thank you, Your Honor. Linda Wiles from the Solicitor's Office. I don't have any questions, but I would like to mark as Exhibit Number 14, the PowerPoints -- the PowerPoint that was displayed by Dr. Jones and Dr. Prior, and have that entered into the hearing docket.

JUDGE FORT: And I'm guessing the numbering is sequential, so it's been going throughout the whole hearing. Okay. Yes. Admitted. Thank you.

MS. WILES: Thank you. That's all for me.

And thank you Dr. Jones and Dr. Prior for participating in the hearing today.

DR. PRIOR: Thank you.

DR. JONES: Thank you.

JUDGE FORT: Any questions from participants?

MS. CARLON: There are none, Your Honor.

JUDGE FORT: Perfect. Okay. Thank you.

Thank you, speakers.

DR. JONES: Thank you.

MS. CARLON: Next speaker group is Climate Law Accelerator at NYU Law, LatinoJustice, and Federation of Teachers of Puerto Rico, represented by Ashley Nemeth -- excuse me -- Roberto Cruz, and Mercedes Martinez.

Please state your name and affiliation for the record as you move throughout your testimony.

MR. CRUZ: Good afternoon, Your Honor. It's --

Go ahead, Ashley.

MS. NEMETH: No, please, go ahead, Roberto.

MR. CRUZ: Good afternoon, Your Honor, and members of the panel. My name is Roberto Cruz. I am the Southeast Regional Managing Attorney for LatinoJustice PRLDEF, and I appreciate the opportunity to testify today in strong support of OSHA's proposed rule on Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings.

LatinoJustice is a national civil rights organization serving the LatinX community across the

United States and its territories. We work daily with immigrants, low-wage workers, and community-based advocates who know firsthand the dangers of working in extreme heat. We are here today because this rule has the potential to save lives, particularly the lives of agricultural workers, warehouse workers, and construction laborers who are on the front lines of our climate crisis.

We also appear in collaboration with Climate Law Acceleration at the NYU School of Law, otherwise known as CLX, and the Federacion de Maestro de Puerto Rico. Together, we submitted detailed comments recommending specific improvements to OSHA's proposed rule. My testimony today will highlight two out of ten of our most urgent recommendations, starting first, with the fact that we recommend that OSHA must strongly encourage employers to use wet bulb globe temperature, or WBGT, monitoring devices. These devices give a more accurate reading of heat stress by accounting for humidity, wind, sunlight, and radiant heat, something basic heat index forecasts simply cannot do.

Researchers show that commonly used OSHA NIOSH

heat safety tool app fails to identify high-risk conditions, especially when solar radiation is a factor. And while we do not require making WBGT devices mandatory, OSHA should clearly state that they are the best available option, and encourage their use where feasible.

Second, we urge OSHA to limit the use of the exemption for sedentary indoor work. These exemptions should only apply when indoor temperatures remain below 86 degrees Fahrenheit. Even at so-called light workloads, temperatures above this threshold pose a serious risk to health. This is not a speculative concern. This is what OSHA's own scientific guidance tells us, and it is consistent with the standards in states like California and Colorado.

Indoor nursery workers, greenhouse staff, processing facility workers, and as you will soon hear, even teachers in Puerto Rico may be classified as sedentary and work under some of these conditions. They are still vulnerable to extreme heat and with -- our call is just to not leave them behind.

So in order to hear more about teachers in Puerto

Rico specifically, I have the pleasure of introducing the Director of Programs at NYU School of Law's Climate Law Accelerator, Professor Ashley Nemeth.

So Professor?

MS. NEMETH: Thank you very much, Roberto.

I'm here speaking on behalf of CLX, and not the law school or larger university. We were supposed to have Mercedes Martinez Ballija, the President of the Puerto Rican Federation of Teachers, speak today, but she unfortunately had a personal emergency. So I'm going to be reading her statement, which was originally written in Spanish. And we've translated it for the purpose of this hearing and we'll submit the original translation in our post-hearing brief. So I'll begin.

"Thank you for the opportunity to appear before you. I'm here today to share an urgent and deeply human concern -- the impact of extreme heat, aggravated by climate change, on the health, safety, and dignity of teachers in Puerto Rico. In recent years, Puerto Rico has witnessed record temperatures, which have turned the island's schools into dangerous spaces for teaching and learning."

"What we're experiencing is not an isolated incident. It is a growing and sustained trend that demands immediate attention. Since 2023, when the Federation began to document this crisis more rigorously, the Federation, along with other teacher's groups, raised their voices in multiple ways. That year, we sent a formal letter to the Department of Education with data, findings, and proposals to mitigate the effects of heat in schools, and this was not an isolated complaint."

"The Federation continuously monitored the situation in 2023, 2024, and 2025, meeting with both the previous and current Secretary, insisting that this situation cannot continue to be ignored. In order to demonstrate the magnitude of the problem, the Federation conducted a survey of more than 2,300 public school teachers in September of 2023, and the results were overwhelming."

"1,381 teachers reported not having air-conditioning in their classrooms. 1,606 teachers reported dizziness among themselves, their colleagues, and their students. There were documented 295 fainting

spells, 213 people required emergency medical attention, and over 600 teachers reported other health issues related to extreme heat."

"As the Federation knows, currently there's over 1,200 schools whose fields do not even have fans. And these are not abstract numbers; they are real lives that are being affected every single day. In some schools, the Department of Education in Puerto Rico has authorized reduced hours and reduced classroom enrollment as a mitigation measure. However, in the vast majority of these cases, these measures only apply to students, leaving teachers and non-teaching staff under the same extreme conditions."

"And so the Federation asks, what is the point of protecting students but exposing those who teach them? And the school structures in Puerto Rico exacerbate this reality. Low ceilings that accumulate heat, classrooms without cross-ventilation, glass windows that do not open, overcrowding, and in some cases, as the survey indicates, air-conditioners that don't work or cannot cope with outside temperatures".

"And there have even been reports of repairs that

go in and remove windows altogether, therefore worsening ventilation, not helping. And the health effects reported by teachers in the survey are undeniable; headaches, physical exhaustion, respiratory crisis, anxiety, difficulty concentrating while trying to teach, and the particular impact on students with sensory needs and those in special education programs."

"And so that's why the Federation insists that this is not just a consequence of the climate outside, but also, of the decisions that are made indoors. It's an occupational health crisis, and this is where OSHA precisely has a crucial role to play. Its mandate is to protect the health and safety of all workers, and it is the view of the Federation that the state, as an employer, is violating that principle by failing to guarantee minimum thermal safety conditions for teaching, administrative, and support staff in the country's public schools."

"And so the Federation would like to reiterate some of the measures that they have proposed over the years in order to better protect teachers. And those include installation of drinking fountains and

thermometers in classrooms; equitable application of reduced schedules also for staff, and not just for students; reduction of student class sizes to improve ventilation and teaching conditions; emergency protocols for when extreme heat days do happen; preventative maintenance for air-conditioning at school infrastructure; and a transition to renewable energy sources that would allow the cooling system to operate without restrictions and would not be subject to the failings of the electrical grid; and above all, a real institutional will to treat this issue as what it is -- a workplace health and safety crisis."

"And so the Federation respectfully requests that OSHA conduct a formal and detailed investigation into the thermal and environmental conditions in Puerto Rican public schools, that they require the equitable application of reduced hours for school staff, and that they recognize that extreme heat is a real and present occupational hazard by passing this rule."

"OSHA has the power and responsibility to act, and the agency's intervention can make a meaningful difference in the health and safety of public school

staff and students. Ultimately, it's not about convenience; it's about labor rights, physical health and human dignity. And Puerto Rican public school teachers need OSHA'S support, and the school community is counting on this rule passing."

And so that's the end of the statement on behalf of the President, Mercedes. I want to quickly just step out of that voice and back into my own, recognizing that there's very little time left, just to reiterate that we hope that the Federation's testimony provides the agency a view into why changes to the indoor sedentary exemption are so necessary.

The current exemption for sedentary indoor work risks excluding thousands of workers who may be exposed to dangerous indoor heat, like public school teachers in Puerto Rico, and there may be many more indoor workplaces that are similarly impacted. And so we hope the agency will keep them in mind as they finalize this rule. We'll note in our post-hearing brief that we think these rules protect, you know, paramount health and safety, but also productivity.

And so studies make clear that protecting workers

from extreme heat endorses both the right choice for employees and employers alike. And so we thank OSHA for providing us this opportunity to testify, the three of us together. And given that Mercedes is not here, and our desire to answer all questions thoroughly, we'll be happy to answer any questions posed in our post-hearing brief, rather than orally. Thank you so much.

JUDGE FORT: Thank you.

Are there questions from OSHA?

MS. WANGDAHL: Thank you, Your Honor. This is Amy Wangdahl with OSHA's Directorate of Standards and Guidance. We do have a few questions, and the panel has already indicated that they would like to submit in the post-hearing brief. So in an interest of time, is it okay if we just read the questions into the record, Your Honor?

JUDGE FORT: Yes.

MS. WANGDAHL: Okay.

JUDGE FORT: Please start.

MS. WANGDAHL: I'm going to turn it over to Brenda Finter, who's going to read a few questions.

MS. FINTER: Good afternoon. Brenda Finter, OSHA Directorate of Standards and Guidance.

First question has to do with drinking water. In your written comment, you urged that OSHA should specify a temperature 65 -- sorry -- 60 degrees Fahrenheit or cooler for what is suitably cool drinking water. What's the most effective methods your network has observed employers used to consistently maintain water at or below this specific temperature throughout the entire work day, at work sites, like large agricultural fields?

Also, we heard from multiple witnesses during this hearing that water temperature is a personal preference, and therefore, OSHA should not mandate a specific temperature for drinking water. Do your organizations foresee any issues among workers who may prefer drinking water at a warmer temperature?

Should I keep going?

Okay. And the second question has to do with the Heat Injury and Illness Prevention Plan. In your submitted comment, you write that OSHA must prioritize language accessibility and make sure all plans and

training materials are provided in predominant languages. Do your organizations have recommendations for translation tools that can accomplish these goals accurately for most employers?

And that's all I have.

JUDGE FORT: Thank you. And those are the questions from OSHA?

MS. WANGDAHL: We have a few more questions, Your Honor, from Joo-Hyung Shin.

MS. SHIN: Hi, this is Joo-Hyung Shin from OSHA.

I have two questions to read into the record. The first question is about school bus drivers. So in the absence of data on the percentage of vehicles who has sufficiently cooled vehicle cabs, OSHA's preliminary economic analysis assumed that 50 percent of school bus drivers work in sufficiently cooled vehicles. Do you think this is a reasonable estimate for Puerto Rico? If not, if you have any data on the percentage of operating school buses that lack air-conditioning in Puerto Rico, and you could submit those in post-hearing comments, we would greatly appreciate it.

My second question is about the survey data that

was cited in the testimony. We would really appreciate if you provide the -- the survey data outside of the testimony, and in particular, the survey data that was mentioned in the testimony; they seem to be presenting the raw counts, like, the number of teachers that report heat-related illnesses or the number of buildings that will likely see. If it -- I think it will be more -- especially on -- more useful for OSHA if those numbers could also be expressed in terms of percentages, like, the share of school buildings in Puerto Rico that lack AC and et cetera because as we all know, we don't have a lot of good data in U.S. territories like Puerto Rico. So yes, that additional information on those three measures you found in the survey would be greatly appreciated. Thank you.

MS. WANGDAHL: This is Amy Wangdahl, again. You mentioned a survey, it -- the survey of teachers. So if that's something that you'd be able to provide, we would appreciate that as well. And thank you very much for your time and testimony. We appreciate the panel being here today and you reading the comments into the record.

Your Honor, that concludes the questions from OSHA.

JUDGE FORT: Thank you.

Are there questions from the Solicitor of Labor?

MS. WILES: Thank you, Your Honor. Linda Wiles from the Solicitor's Office.

I don't have any questions, but thank you so much for being here today and participating in the hearings.

JUDGE FORT: Thank you.

Are there questions from participants?

MS. CARLON: There are none, Your Honor.

JUDGE FORT: Wonderful.

Thank you, speakers.

MS. NEMETH: Thank you.

MR. CRUZ: Thank you.

MS. CARLON: All right. Now that we're at the end of the speaking order, we're going to go ahead and call anyone that was marked absent. We --

JUDGE FORT: Do we want to take a break before we do that? Do folks need a break, or are we fine to continue?

MS. WANGDAHL: Your Honor, we're fine continuing.

JUDGE FORT: Okay.

MS. CARLON: Great. Our next speaker will be Alejandra Domenzain. Please state your name and affiliation for the record.

JUDGE FORT: Speaker Domenzain, I am not hearing you.

MS. DOMENZAIN: Can you hear me now?

JUDGE FORT: I can. Thank you.

MS. DOMENZAIN: Okay. Great. I'll start again.

My name is Alejandra Domenzain with the Labor Occupational Health Program, which is part of UC Berkeley School of Public Health. Our mission for the past 50 years has been to promote safe, healthy, and just workplaces, and build the capacity of workers and their organizations to take action for improved working conditions.

I want to share our recommendations based on our experience training thousands of workers every year, including around heat illness prevention, and these are mostly low-wage, immigrant, youth, and BIPOC workers in high-hazard industries such as domestic work, day laborer, janitorial, restaurant and fast food,

farmworkers, hotel housekeepers, retail, and others.

Our experience also takes into account our observations of the implementation of California's outdoor heat standard since 2006 and indoor heat standards since 2023.

So one, the worker fatalities and deadly risks from exposure to rising heat is more than enough evidence to warrant action immediately. And we can't allow employers to give the excuse that protections are not feasible just because they require investments to protect worker health. Our laws need to set a higher bar. Indoors, employers have many engineering controls at their disposal to reduce indoor temperatures until they are safely under the trigger point. And if it's truly impossible, then a combination of administrative controls must be just as effective as engineering ones to prevent illness.

In California, we've seen creative strategies to do this, such as including shifting work hours. And then, in the event that indoor and outdoor heat cannot be adequately controlled, workers must simply not be put in dangerous situations. So they can be assigned

safe work to do alternatively, or dangerous work has to be postponed, with workers receiving fair compensation for circumstances that are out of their control.

Number 2, a standard in employers' prevention plans must put the burden on the employer to ensure safety rather than expecting workers to ask for prevention measures. In low-wage work, there's a dramatic power difference between workers and employers. Workers usually do not know their rights, and if they do, they have no leverage to ask for protections because retaliation among low-rate employers is rampant, and there's little to no recourse when it happens.

So for example, breaks must not only be allowed, but enforced. Water must be located close enough that it's actually accessible. The work pace and production expectations must accommodate the additional burden that's going to be placed on workers' bodies that are doing strenuous work in the heat.

Number 3, it should be clear that employers' responsibility is not just to comply with the standard's provision triggered at specific

temperatures, but to do whatever it takes to actually protect workers. Many people have health conditions or are taking medication that makes them more prone to heat illness, and everybody's tolerance is different. Even when workers don't report symptoms or illnesses, just being subjected to heat hazards has an impact on their health, and this is both short-term and long-term.

Number 4, acclimatization means allowing workers' bodies time to adjust gradually to doing particular work in a specific environment, not just monitoring them as they are assigned a full load from the very beginning and hoping for the best. True acclimatization requires a plan to slowly increase time working in the heat over many days. Just because someone lives in a hot climate, it does not mean that they are acclimated to doing a specific job task that's likely to be demanding for a sustained amount of time, where they have no control over their environment and where they have an incentive to self-exploit to keep their job and bring home a paycheck.

Lastly, number 5. Training must be meaningful.

This includes useful content such as what personal work factors may put workers at risk; how to identify and act on symptoms; the details of the employer's plan to address heat hazards, including both preventative measures and emergency procedures; and workers' rights, including asking for breaks as needed with no retaliation. We know that the most effective training is in-person, interactive, practical, and in the language and literacy level that makes it accessible to all workers.

Climate change is resulting in higher temperatures for more of the year in more places and extreme heat is the new normal. However, occupational heat illness is completely preventable.

Even with solid indoor and outdoor heat standards, in California, workers are suffering. According to analysis from the California Department of Public Health, between 2000, 2022, workers filed over 20,000 workers' compensation claims for heat-related illness. And between 2016 and 2023, there were almost 6,000 emergency department visits for work-related heat illness. And these are probably gross undercounts,

given that many workers do not report illness, and also, many symptoms are not linked to occupational exposures. So this points to the need for sustained education and outreach programs so that employers know their responsibilities, and then, workers know their rights.

In conclusion, we urge OSHA to implement the most protective standard possible that puts human life first. We know that in low-wage industries where workers are most vulnerable, and where heat protections are most needed, there are many employers who have failed to monitor themselves, and in fact, cut corners as a business strategy.

All workers have loved ones waiting for them at home. They deserve to earn their keep without risking their lives. Low-wage workers do some of the hardest jobs that make our economy run. The least we can do is make sure everything is done to keep them safe. A strong standard with clear employer accountability is a basic first step. Thank you.

JUDGE FORT: Thank you, Speaker.

Are there any questions from OSHA?

And I'll remind the speaker that you may respond by post-hearing comment.

MS. WANGDAHL: Thank you, Your Honor. This is Amy Wangdahl with OSHA's Directorate of Standards and Guidance.

JUDGE FORT: Uh-huh (assent).

MS. WANGDAHL: We do just have a few questions.

I'd like to go to Zoe Petropoulos, who's participating virtually.

MS. PETROPOULOS: Hi. This is Zoe Petropoulos for the Directorate of Standards -- with the Directorate of Standards and Guidance. So I have a couple of questions, but I think these are best suited for post-hearing comments, but you're welcome to provide any comments that you have on these topics now.

My first question is, are you aware of any data reports, analyses, or papers that OSHA did not cite in the NPRM that could be used to evaluate the effectiveness of Heat Injury and Illness Prevention Plans, or components of those plans, their effectiveness in reducing heat-related injuries and illnesses? And if you are aware, if you could submit

those in post-hearing comment, we would appreciate it.

MS. DOMENZAIN: Yes, I would be happy to include anything I'm aware of. I mean, unfortunately, as I -- you know, as I explained, a lot of our work is with low-wage industries and informal sectors, right? So if you have day laborers that are picked up on a corner and sent to work on a roof somewhere, there isn't just the -- the same kind of documentation that there is in more established workplaces. But so -- so that is a -- you know, one limitation of the data. But absolutely, if there's anything that I can, you know -- that I can include, I would be happy to.

MS. PETROPOULOS: Thank you. You also mentioned in your testimony that material should be provided in languages that employees understand. I'm wondering if you or your organization has any recommendations for translation tools that can accomplish these goals accurately and easily for most employers?

MS. DOMENZAIN: Yeah, absolutely. I mean, we, you know -- there's programs like ours and other UC programs and other locations that -- our -- our sister organizations that have not just materials in other

languages, but literacy level is really important, you know? Many workers, for example, they might speak Spanish as a third language, right, but their first two are indigenous languages, and they don't have a high literacy level.

So even if you translate something that's at a eighth-grade reading level, or you know, from a department -- you know, a agency that has very legalistic terms, it may still not be understandable. So just to say, you know -- and -- and we -- we know that that is a requirement for health and safety training, that it has to be in the language and manner that workers understand.

And manner includes things like literacy and accessibility. So just to say, it's not just translating what's on, for example, a government web page that may not make any sense, but actually having materials that are literacy-friendly, and ideally trusted community messengers, right? These worker organizations that have built trust in the community, that workers know that they're getting accurate information that's meant to protect them, and that can

explain it, hopefully again, in-person, in a very practical way. And so any, you know -- we have some funding in California, for example, that goes to worker centers and unions and organizations that can do just that.

MS. PETROPOULOS: Got it. And my last question which, you know -- again, you can answer now or in post-hearing comments if you have any thoughts. In your experience, what are the most common methods that employers are already using to prepare for and respond to heat emergencies in the workplace?

MS. DOMENZAIN: I wish I could tell you great case studies of this. Again, this is, you know, maybe not reflective of the whole workforce, but we deal with mostly low-wage industries where there are a lot of predatory employers. That is their business model, and so there isn't -- there isn't very much. With training, what we hear is there is none, or if there is, it's, you know -- workers get a little piece of paper that they don't understand, and they're asked to sign it so that, you know, employers can check off that they're in compliance, that they have been trained.

They don't get told what the plan is. Often, there is no plan. The plan is if someone gets ill, we'll deal with it and figure it out, but they're not structural changes that are there for prevention.

And I --it -- someone said it, and you know, before me, and it's -- the very sad reality is many workers in these industries are treated as disposable. If you are sick, go home; I'll get someone else tomorrow. So there's not-- there's not a lot of prevention, there's not a lot of training, and there's not very comprehensive plans in these industries. And -- and -- and there's no excuse, right? So for example, you could say, like, well, the, you know -- the -- the -- there's not -- the -- it would take such a huge budget to air-condition a whole warehouse or something like that, but you know, we did a -- a -- a training with, for example, the workers in Silicon Valley, and some of the richest tech companies.

And they are the workers who are serving the food, who are in the food trucks right, who are in the kitchen, and they are getting -- they're fainting. They're passing out from heat illness, and they are in

these air-conditioned buildings with companies that have a lot of resources to ensure, right, that the people that are preparing their food are also taken care of. So that's why I, kind of, really want to stress the employer accountability.

Most of these workers in low-wage settings have absolutely no leverage to ask for a break or to say that they're ill. They know they'll be replaced. They know that the priority is not protecting them.

MS. PETROPOULOS: Thank you so much.

And that's it for my questions, Amy.

MS. DOMENZAIN: Thank you.

MS. WANGDAHL: And we want to thank you for your time and testimony today, Ms. Domenzain. We look forward to your post-hearing comments and providing the additional answers from Zoe's questions.

And Your Honor, that concludes questions from OSHA.

JUDGE FORT: Thank you.

Are there questions from the Solicitor of Labor?

MS. WILES: Thank you, Your Honor. Linda Wiles from the Solicitor's Office. I don't have additional

questions.

Thank you so much for participating today, Ms. Domenzain.

JUDGE FORT: And are there questions from participants?

MS. CARLON: There are not, Your Honor.

JUDGE FORT: Great.

Thank you, Speaker.

MS. CARLON: And we are going to recall the UCLA Heat Lab panel.

Once again, we do not see your names listed in the attendee list, so if you have joined under a different name, please use the raise hand button to indicate your presence. And if you have dialed in, please select star three to raise your hand.

And at this time, Your Honor, this group is still absent, so that would be our last speaker for today.

JUDGE FORT: All right. Great.

We are now at the end of the scheduled witnesses for today. I'd like to remind the hearing participants they can submit additional evidence or statements relevant to the proceeding within 90 days at the end of

the hearing, which will be September 30th, 2025. At that point, the record for this rulemaking will close.

On behalf of the Department of Labor, I wish to publicly thank all the people who gave their time and their testimony to contribute to this hearing today. To all the participants, thank you for your interest in this important matter.

The hearing is adjourned for today. We will reconvene at 9:30 a.m. Eastern tomorrow. Thank you.

(Whereupon, at 4:30 p.m., the hearing was adjourned.)

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