United States House of Representatives
Select Committee on the Climate Crisis

Hearing on July 15, 2021
"Advancing Environmental Justice Through Climate Action"

Questions for the Record

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The Honorable Kathy Castor

1. **Dr. Park, you have just completed new research on the extent of heat-related injuries. Previously, official estimates have been that exposure to heat causes 4,000 workplace injuries a year. But by reviewing worker compensation claims, you have found that there are 15,000 or more workplace injuries every year just in California. Why have agencies like the National Institute of Occupational Health and the Bureau of Labor Statistics underestimated the dangers of exposure to heat in the workplace?**

It's worth taking a step back here. Agencies including the ones mentioned have been noting that official statistics likely underestimate heat-related safety risks for quite some time. I'm not a physician, but my understanding is that it is very difficult to forensically attribute a particular illness or injury to heat illness or other heat-related factors on a case by case basis.
One difference between our study and many other previous analyses is that we do not limit the analysis to incidents that are officially recognizable as heat illnesses, but include in our analysis all injury types, and let the data tell us how even those ostensibly unrelated injuries – which are vastly greater in number on average – vary with daily temperature.

2. **Dr. Park, there are heat waves occurring across our country this summer. When temperatures increase to 100 degrees or more, how much does the chance of injury increase and is this a significant increase in risk for workers?**

At least in our data, which covers the State of California, a day with maximum temperature in the 100's or higher leads to a roughly 10 percent (or higher) increase in injury claims relative to milder days in the 50's or 60's.

3. **Dr. Park, your data is from California, one of the few states with state rules protecting workers from heat exposure. Does this suggest that the risks might be even higher in other states without protective laws, and do you believe we need stronger federal standards to protect workers from heat exposure?**

My co-authors and I hesitate to make strong claims regarding other states, given the many potential differences in settings. We are also cautious not to interpret our data as necessarily showing that the California heat standard was what caused the decline in heat-sensitivity of injuries documented during our study period. That said, it seems unlikely that the general relationship between hotter temperature and workplace safety is limited only to California. In fact, another recent study that uses similar worker's compensation data from the state of Texas (Dillender, 2019), finds a similar relationship between extreme temperature and injuries.

Whether we need stronger federal standards to protect workers from heat exposure, and what form of regulation that would ideally take, are important questions for which I believe we still need better data to decide. A useful analogy may be that our study is more like an MRI or CT scan that helps reveal the scope of the problem than a blueprint for the ideal treatment regimen moving forward. When it comes to regulating the workplace, I think we should be cautious not to impose extra costs that are ultimately born by workers, firms and the rest of society. It may also be worth considering broader factors – including labor market concentration and monopsony generally – that may affect workers' bargaining power, and which may ultimately affect the likelihood that effective safety measures are put in place even without specific regulation or oversight.

4. **Dr. Park, a striking aspect of your findings is that it is not just farm workers and construction workers who work outside who are at risk from exposure to heat. You are finding that workers who work inside in warehouses, factories, and food processing facilities also are in danger when temperatures rise. If you add these outdoor workers with at-risk indoor workers, that is over 30 million Americans who can be at risk when our nation is facing heatwaves like we are seeing this summer. Should we be concerned about their safety? How serious were the heat-related injuries you observed in the data? Did they cause workers to miss work and lose income? Did they lead to serious injuries? Do we need stronger laws to protect Americans from the dangers of exposure to heat in the workplace?**

Yes, our study finds that hotter temperature increases injuries not only in outdoor settings, such as agriculture or construction, but also in some indoor settings as well. These include industries like warehousing, manufacturing, and wholesale, where there are many more potentially exposed workers. Data from occupational surveys suggest that many of these workers often work in indoor environments that nevertheless become very hot on warmer days, either because there is little to no air conditioning, or because they are also contending with indoor sources of heat, such as stoves and kilns or manufacturing machinery.

We know based on previous studies that injuries and illnesses serious enough to be reported to worker's compensation – which still only captures a subset of the totality of injuries and illnesses on the job – end up causing significant economic damage to workers, their families, and to society as a whole. This comes in the form of direct costs such as medical expenses and lost wages due to missed work, as well as indirect costs including adverse consequences for injured workers' likelihood of securing well-paying employment in the future (studies find that, on

average, hospitalizations lead to persistently lower wages) or employers' costs of lost productivity and retraining/recruitment.

5. **Dr. Park, your findings are a stark illustration that the people who suffer the most from the climate crisis are not the wealthy; they are low-income workers and low-income communities. How much greater are the risks for a low-income worker than a higher income worker? Why are low-income workers at greater risk than upper income workers?**

Emerging research suggests that climate change affects the rich and the poor in different ways – not only across rich and poor countries, but also across individuals within countries, even within individual states, cities, and neighborhoods. We are still learning about the exact nature and extent of these differences, and what can be done to better insulate the most vulnerable from climatic shocks.

In our study, we find that the average worker in the bottom quintile of the income distribution experiences a five times greater risk of workplace injury due to heat. This is in part because lower income workers are more likely to work in dangerous work environments to begin with, and also because they are more likely to live in hotter places due in part to housing costs.

6. **Dr. Park, when people think about environmental justice, they think about the extra pollution burdens that disadvantaged communities have to bear. This is clearly a serious problem. But your research shows there is another significant dimension to this problem. Not only do low-income communities face heavier pollution burdens and live in neighborhoods with fewer trees and higher temperatures, workers from these communities face much greater risks from heat exposure when they go to work. You have also done work showing that exposure to heat stunts learning in schools and that minority children are the most affected. Your work shows why justice and the environment are inseparable issues. If we want our disadvantaged communities to live in safe environments, if we want low-income workers to work in safe workplaces, if we want children from low-income communities to thrive at school, we have to take our environmental threats – and especially climate change – seriously and urgently. Do you have any recommendations for how we can address these issues?**

Our work and others' is beginning to show how climate change may exacerbate underling economic inequalities. In other work my colleagues and I have done on heat and learning, we find that hotter temperature is far more problematic for learning for Black and Hispanic minorities and lower income students, in part because they are significantly less likely to have modernized school facilities that have adequate ventilation and air conditioning. This points to an immediate area in which policymakers may help to address the threats that climate change pose for low-income communities: by investing in school infrastructure.

More broadly, the Federal Government could play an important role in getting ahead of the climate adaptation curve: by investing in information-gathering and policies that help prevent the climate shocks that are at this point inevitable from further exacerbating economic inequalities.

In particular, the Federal Government could help engage in coordinating better data collection, as there is still much we do not know regarding who is most vulnerable to various climate shocks and why. Furthermore, research on risk mitigation and social insurance suggests that the Federal Government also will need to play a role in helping to spread the risk of climate shocks – which manifest differently across different parts of the country, hitting some harder than others, and on time frames that may also vary by region – across a wider pool of taxpayers.