More Washington state agricultural workers injured in hot weather

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This screenshot from a video produced by the University of Washington demonstrates how to respond to workers who are experiencing symptoms of heat-related illness. Credit: Stacey Holland, Pacific Northwest Agricultural Safety and Health Center

Warmer weather is related to an increase in traumatic injuries for outdoor agricultural workers in central and eastern Washington.

These findings, which appear Oct. 7 in *PLOS ONE*, come from a study by researchers at the University of Washington and the Washington State Department of Labor & Industries' Safety & Health Assessment & Research for Prevention (SHARP) program.

The study is the first to estimate the risk of traumatic injury in farm workers using temperature data linked to the geographic location of the injury.

The researchers reported on more than 12,200 traumatic injury workers' compensation claims filed by agricultural workers from 2000 to 2012.

"Taken together with prior research in this area, our results suggest that we need to be proactive when it's warm outside, particularly when work is physically demanding, in order to prevent heat-related injuries as well as heat-related illness," said June Spector, lead author of the study and assistant professor of environmental and occupational health sciences in the University of Washington School of Public Health.

Internal body heat generated from physical exertion contributes to overall heat stress. One of the most well documented health effects of hot weather is heat-related illness. This can range from heat rash to heat stroke, which can be fatal.

This is a scene from a University of Washington video that demonstrates how to respond to workers who are experiencing symptoms of heat-related illness. Photo credit: Stacey Holland, Pacific Northwest Agricultural Safety and Health Center. Credit: Stacey Holland, Pacific Northwest Agricultural Safety and Health Center.

"This study reinforces the importance of prevention," said David Bonauto, co-author of the study and research director of SHARP. "Employers need to provide plenty of fresh drinking water, start work as early in the day as possible, and encourage workers to take breaks and pace themselves."

In the case-crossover study, researchers identified the temperature and humidity at the approximate location of the injury on the injury day. To understand how heat may have been a factor in the injury, the researchers compared the heat and humidity on the injury day with days when there was no new injury for that individual working at the same

work location.

The connection between heat and injury was not surprising to the researchers. With heat exposure, dehydration, and fatigue, a person can become less stable on their feet and have more difficulty concentrating. The exact mechanisms responsible for the increased risk observed need further study, Spector said.

The average daily maximum temperature between May and September during the twelve-year period studied was 82.2 degrees Fahrenheit, with temperatures at times exceeding 100 degrees Fahrenheit. Add humidity and the weather can feel even hotter. Exertion also influences heat stress placed on the body. A cherry harvester, for example, has a physically demanding job that requires carrying and climbing ladders with bags of fruit. Being paid for work by the amount harvested can make the job more intense. This piece rate scheme can provide an opportunity for increased pay but also encourages workers to work harder and faster.

"Our findings underscore the importance of working together with workers and growers to identify and evaluate practical strategies that address the increased risk of injury that outdoor agricultural workers face in the heat," she said.

Washington state has workplace safety standards—in effect from May to September— that address outdoor heat in agriculture. Legislation was recently passed to require paid rest breaks.

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More information: June T. Spector et al, A Case-Crossover Study of Heat Exposure and Injury Risk in Outdoor Agricultural Workers, *PLOS ONE* (2016). DOI: 10.1371/journal.pone.0164498

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