

Heat and Farm Workers' Health

A pre-project in the Western Center for Agricultural Health and Safety looking at ways to reduce farm workers' risk of heat related illnesses.

THE DEPARTMENT OF PUBLIC HEALTH SCIENCE and the Western Center for Agricultural Health and Safety are looking for ways to reduce the impact of climate change on farm workers whose occupation leads them to be exposed to excessive sunlight and heat.

California has more than 600,000 farm workers who are at high risk of heat related illness. This elevated risk is due not only to increased sun exposure, but also to the generation of body heat from doing farm work. Yearly heat related illnesses lead to fatalities. Global warming is expected to increase both average temperatures and frequency of heat waves. Therefore, farm workers are a particularly vulnerable population.

Our project is a multi-disciplinary study of physiological, social and cultural factors which influence how farm workers deal with heat and work. We will be collecting data on all factors that may make an individual susceptible to heat related illness including: rate of work, the hydration levels, age gender, general health, acculturation status, humidity, wind, radiant sunlight strength and actual temperature. The farm workers themselves will be asked to give their perspective and suggestions for remedies. We also aim to find innovative clothing solutions to reduce and dissipate body heat. The ultimate aim is to translate research into practical solutions acceptable to both workers and their employers.

GETTING TO SOLUTIONS

Multi faceted study approach: PHYSIOLOGY, WORKER INPUT and CLOTHING



Workers swallow a thermometer pill. It transmits internal body temperature to a recorder. Heart rate is also recorded as an indicator of metabolic activity on work (heart rate increases with work rate). These data will be used to find out what conditions increases the risk of overheating.



Investigate promising farm practices and clothing solutions on workers for acceptability and comfort.

How do different crop types and work tasks stress the body as a farm worker labors under the summer sun?



Does how you are paid, whether you are female or how well you speak English affect your susceptibility to illness?

PHYSIOLOGY EXPERIMENTS



CLOTHING/TEXTILES



Develop textiles to protect against UV and heat trapping and allow sweat to evaporate. Survey focus groups to evaluate design

FOCUS GROUPS



Find out what workers and employers think are barriers to protecting farm workers against heat illness. Collect their ideas and assess possible solutions.

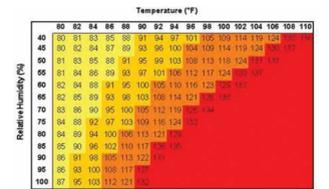
CONTRIBUTING FACTORS

ENVIRONMENTAL



Solar radiation

Conduction of heat and solar radiation from ground



Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Heat, air temperature and relative humidity

Lack of air movement

PHYSIOLOGICAL



Metabolic heat generated while working—INTENSITY AND DURATION

Evaporation from sweating and respiration



PERSONAL



Inadequate hydration— at work and at home

Lack of acclimatization and/or fitness

Inability to sweat enough to cool body

Worker age

Obesity



Insufficient shade and/or break time

Too little clothing or clothing that prevents evaporation of sweat

WHEN BODY TEMPERATURE REACHES 103° DETRIMENTAL EFFECTS ENSUE!

When the air temperature is greater than 85°F, employers MUST provide:

- Clean, cool water, readily available to workers
- Access to shaded rest areas
- Training—how to protect oneself from heat and symptoms of heat illness
- Emergency response to sick employees

CREDITS:

M. Schenker, M.D., M.P.H.
J. Jones, Ph.D., D.V.M.
G. Sun, Ph.D.
G. Wadsworth, Ph.D.
D. Tancredi, Ph.D.

CONTACT:

Diane Mitchell, Ph.D.
dcmitchell@ucdavis.edu
(530) 752-1810