California Agriculture, Heat & Worker Safety

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Presentation to:

Commission on Health & Safety and Workers' Compensation

Why This Matters

- Heat is the leading weather-related cause of death in the U.S.
- California agriculture employs hundreds of thousands of outdoor workers.
- Climate change is increasing frequency and duration of extreme heat events.
- Heat risk now extends beyond agriculture to construction, logistics and utilities.

California Led the Nation

- 2005: Farmworker deaths exposed gaps in heat protections.
- 2006: California adopted the nation's first Outdoor Heat Illness Prevention Standard.
- Water, Rest and Shade became the foundation of prevention.
- 2024: California expanded protections through indoor heat standards.

CHIPS Research

CHIPS monitored 587 California farmworkers.

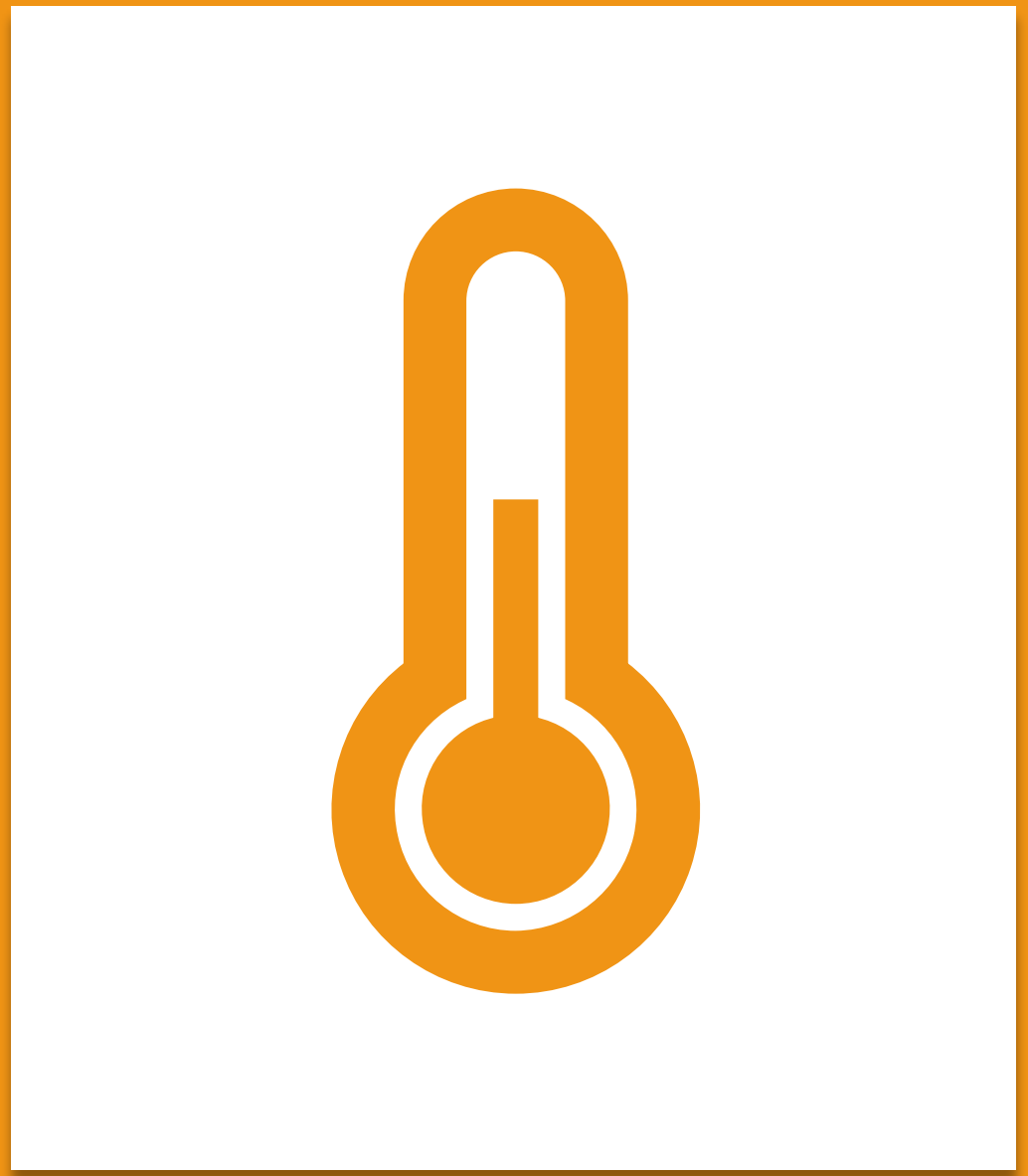
Measured core temperature, heart rate, hydration and workload.

Workers often exceeded physiologic thresholds while appearing healthy.

Research shifted focus from weather conditions to worker physiology.

Core Body Temperature

- Many workers exceeded 38°C core body temperature.
- Heat strain develops before visible symptoms appear.
- Higher work intensity increased heat illness risk.
- Early detection is critical to prevention.



WBGT vs Air Temperature

- WBGT accounts for temperature, humidity, solar radiation and wind.
- Provides a more accurate assessment of worker risk.
- Same air temperature can create different physiological stress.
- Future standards should incorporate WBGT-based decision making.

Heat Exposure by Crop & Region

- Risk varies by crop type and task.
- Stooped harvesting increases heat burden.
- Piece-rate work may increase physiologic strain.
- Regional climate conditions influence exposure levels.

Wearable Technology

- WEARABLES CAN TRACK HEART RATE, HRV, SKIN AND CORE TEMPERATURE.

- REAL-TIME MONITORING ENABLES EARLIER INTERVENTION.

- TECHNOLOGY CAN SUPPORT—NOT REPLACE—WATER, REST AND SHADE.

- PRIVACY AND WORKER TRUST MUST BE INCORPORATED.

Continuous Monitoring

Continuous monitoring is recommended for high-risk environments.

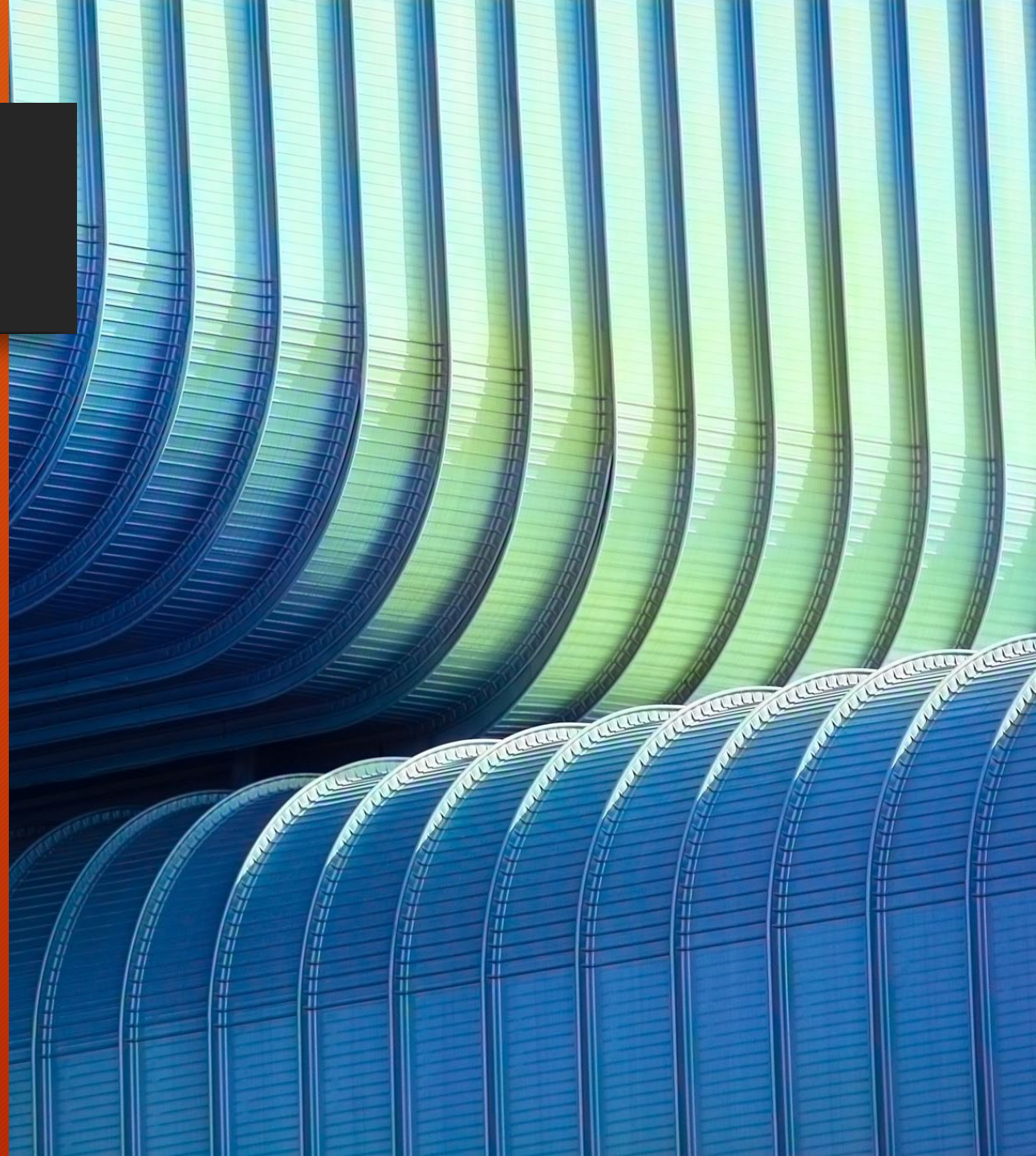
AI can combine weather and physiologic data.

Supervisors can receive alerts before symptoms become severe.

Prevention becomes predictive rather than reactive.

Cooling Technologies

- Cooling vests can reduce thermal strain for several hours.
- Thermoelectric fabrics are emerging technologies.
- Smart rest stations can provide hydration and recovery.
- Innovation should be incentivized in high-risk sectors.



Workers' Compensation

Heat illness is often underreported and misdiagnosed.

Research links heat exposure to kidney and cardiovascular disease.

Consider presumptions for severe occupational heat illness.

Improve reporting and long-term medical monitoring.

Climate Resilient Farms

- • Solar shade can provide worker protection and energy generation.
- • Sensor networks can monitor field conditions in real time.
- • Smart hydration and cooling stations improve recovery.
- • Automation can reduce dangerous physical exertion.

Moonshot 2030

Adopt statewide WBGT-informed heat protections.

Launch agricultural wearable technology pilots.

Modernize workers' compensation treatment of heat illness.

Create a Heat Safety Innovation Fund.

Recommendations to CHSWC

1. Study occupational heat presumptions.
2. Support wearable and cooling technology pilots.
3. Develop incentives for employer innovation.
4. Expand statewide heat illness data collection.

Conclusion

- California has led before and can lead again.
- Science, technology and policy are aligned.
- No worker should choose between health and a paycheck.
- Protecting workers is both an economic and moral imperative.