



Heat Education & Awareness Tools (HEAT)

A train-the-trainer guide for the identification, prevention, and treatment of heat illness in outdoor agricultural workers.

Prevention Checklist

Good health

- Get enough sleep at night (7-9 hours)
- Eat healthy foods
- Don't drink too much alcohol (don't drink more than 1 drink on most nights)
- Drink lots of water, especially when it is hot
- Exercise regularly (at least walk 30 minutes 5 days per week)
- Don't smoke cigarettes or use products with nicotine

Awareness

- Pay attention to how your body is feeling- watch out for early signs and symptoms
- Check out the weather forecast before work so you know how hot it will be that day

Work preparedness

- Know how to call 911, tell dispatcher what happened, and your location
- Drink ½ liter every ½ hour when it is hot out (two 8-ounce water bottles)
- Wear light colored, lightweight clothing
- Make sure your body is used to working in hot weather

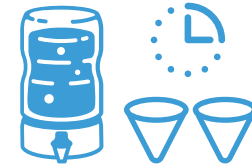


Mon	Tue	Wed	Thu
86° 77°	87° 77°	88° 77°	88° 78°



EMERGENCY CALL

911



Heat illness case studies

This section describes heat illness incidents and fatalities that have occurred in the United States. These descriptions are adapted from investigative reports and media reports. Integrating case studies into worker trainings can help workers realize the risks associated with working in the heat and the importance of being aware of heat illness symptoms.

2005 – Washington State

A 64-year-old, and dedicated employee of 40 years, was found unconscious in the hop field he was working. The high temperature that day was 99°F and it was reported that he had arrived feeling unwell that day and brought extra water. It took only 8 to 10 minutes for the EMTs to arrive. They found no vital signs, but were able to revive a heart rhythm while he was being transported to the hospital. He died several hours later. He died of heat stroke.

SOURCE: Washington Department of Labor and Industries
www.lni.wa.gov/rules/AO06/40/0640CES.pdf

2015 – California

Around 10:30 a.m. a crew began picking from a row of trees at the back of the grove, not far from where a supervisor had set up shade and water—complying with California’s heat illness prevention standards. Forty-five minutes into the shift, a picker, 48, sat down in a shaded area, saying he didn’t feel well. Supervisors asked if he wanted to go to a nearby clinic, but he declined and said he was fine. He asked for water. Minutes later, he collapsed. One picker, who could speak English, called 911. A supervisor jumped into a pickup and sped to meet the medics. When they arrived, it was too late to revive him. The father of three died on the field at 12:35 p.m.

SOURCE: Desert Sun News Online, May 11, 2017
www.desertsun.com/story/news/2015/11/19/death-fields/74058984/

2016 – Florida

A 50-year-old Haitian farmworker, Jean Francois Alcime, died of heat exhaustion during a two-hour bus ride back to Immokalee from the tomato fields. He had appeared tired and was stumbling earlier in the day, so was given water and ice for his neck. He appeared better and was told to head home on the bus. He appeared to be sleeping on the ride, but when co-workers attempted to wake him, he was not responding or breathing. He was pronounced dead Tuesday evening.

SOURCE: Naples Daily News Online, May 11, 2017 and May 19, 2016
bit.ly/2Gmxjej

2008 – California

While tying grape vines in a Stockton area vineyard with temperatures soaring above 100 degrees, 17-year-old Maria Isabel Vasquez Jimenez collapsed from heat exhaustion. By the time she arrived at a hospital, Jimenez was in a coma, and her body temperature topped 108 degrees. She died two days later. It was only at the hospital that it was found out she was two months pregnant. The San Joaquin County Coroner officially confirmed that Maria died of heat stroke. Maria had been working 8 hours in the blistering heat without shade or sufficient water. Other workers reported that the strict foreman didn’t allow them a long enough break to stop and get a drink, which was a 10 minute walk away.

SOURCE: NPR News Online, June 06, 2008
www.npr.org/templates/story/story.php?storyId=91240378

SOURCE: Daily Kos, Monday June 23, 2008
[www.dailykos.com/stories/2008/6/23/540765/-](http://www.dailykos.com/stories/2008/6/23/540765/)

2012 – Maine

It was a cool spring day. A field worker filled in for another in a prescribed burn at a blueberry field. He had never worked a burn before. He became disoriented in the early afternoon but did not recognize the signs of heat stroke. He collapsed and was taken to the hospital, where his temperature was measured at 108 degrees and he was unresponsive and in respiratory failure. He fortunately survived, but he suffers from permanent damage to muscles in his legs and shoulders.

SOURCE: Bangor Daily News Online, May 11, 2017
bangordailynews.com/2016/10/27/news/bangor/judge-awards-blueberry-worker-nearly-730000-in-heat-stroke-collapse

2011 – Illinois

In July, as the Midwest simmered in a heat wave, an employer got a call from an H-2A worker from Mexico who couldn't find his brother after a day in the corn fields. He was told the 36-year-old man had fainted earlier that morning, but returned to work. The worker was missing for 50 days before his body was found in the fields. The county coroner reported he died of hyperthermia from extreme heat. He left behind a wife and three daughters in Mexico.

SOURCE: Chicago Tribune Online, August 6, 2016

<http://www.chicagotribune.com/business/ct-migrant-farm-workers-corn-detassling-0807-biz-20160805-story.html>

2006 – North Carolina

A 44-year-old Hispanic migrant farm worker died after succumbing to heat stroke while working in a tobacco field. The weather was hot and humid with a heat index (a measure of the combined effects of high temperatures and high humidity on the body) between 100 and 110. Around 3 p.m. he complained to the crew leader that he was not feeling well. He drank some water and was driven back to the workers' housing and left alone to rest. At approximately 3:45 p.m. he was found unconscious on the steps of the house. 911 was called immediately and responded within five minutes. At the hospital his core body temperature was recorded at 108° F and he was pronounced dead.

SOURCE: NIOSH FACE Reports, August 7, 2007

www.cdc.gov/niosh/face/in-house/full200604.html

2018 – Georgia

On June 16, Miguel Angel Guzman Chavez arrived in Georgia from Mexico. He was 24 years old and went right to work picking tomatoes. The Georgia heat was consistently more than 90 degrees, and on June 21, the temperature soared to 95 degrees. That day, Chavez collapsed in the field, suffering from heat stroke, which then led to cardiac arrest. Less than two hours later, he was pronounced dead at the Colquitt Regional Medical Center.

The Colquitt County coroner confirms that a 24-year-old man went into cardiac arrest last Thursday while picking tomatoes on a farm in extremely hot temperatures. OSHA says there is an open investigation which is a standard protocol when someone dies on the job.

SOURCE: WALB News, June 25, 2018

www.walb.com/story/38503828/farmer-makes-first-heat-related-death-in-south-ga/

2013 – California

In 2013, California state officials shut down the Etchegaray Farms after a farmworker, Juan Ochoa, aged 37, collapsed and died on a lemon orchard outside of Bakersfield, California. Juan Ochoa was checking irrigation equipment with his brother, Alejandro Ochoa, in 106-degree weather when he collapsed. The brothers were working alone and were six rows apart when Alejandro Ochoa looked around and did not see his brother. He then spotted him lying on the ground. Alejandro Ochoa said he had noticed his brother was fanning himself with his hat but thought nothing of it, as it was a hot day. "We did not have shade or water provided by the company," said Alejandro Ochoa. "When I saw him, I got scared and immediately ran to him," said Alejandro Ochoa. But, Juan Ochoa was unresponsive. Alejandro Ochoa slapped his brother and yelled in an effort to revive him. There was no cellphone reception in the area. Alejandro Ochoa said he ran to his pickup truck, which he parked at least a mile away, and then drove to summon help. Ochoa was from Mexico and had been working for almost a year. When officials came to inspect the farm, they found several violations of California's heat regulations, including no access to shade. The farm was allowed to reopen once it was compliant.

SOURCE: Bakersfield Now, July 7, 2013

bakersfieldnow.com/news/local/cal-osh-a-investigating-farmworker-death

Role plays

Role playing can provide a safe environment to encounter different scenarios for the first time and enhance preparation for situations that occur in the real world. Taking the role play seriously is the best way to ensure preparedness if something does happen in the field and fast action is needed. To encourage workers to take the role play seriously, let them know that being prepared can save a life in the field. If workers seem hesitant to participate, facilitators can also act out role plays to help reinforce messages.

Each role play requires two people. The role plays describe a scenario that two people will act out, followed by follow-up questions for a group discussion. There is a role play for each topic.

Symptoms and treatments for heat illness

Worker 1 and Worker 2 are working together outside on a hot, sunny day. They are sweating a lot but want to finish up their work before taking a water break.

WORKER 1: *Starts getting a headache and tells Worker 2.*

WORKER 2: *Starts talking and becomes confused and angry for no reason then passes out.*

WORKER 1: *Remembers safety training and takes action to help Worker 2.*

FOLLOW-UP QUESTIONS:

What symptoms did each worker have?

Would you have done anything differently to treat the worker who passed out?

Did 911 get all the information they needed?

Risk factors for heat illness

Worker 1 and Worker 2 are harvesting pears in a hilly block on a hot August day and there is no wind. They are trying to harvest as many bins as they can before the end of the day. They are carrying heavy loads of pears up and down ladders and to their bins.

WORKER 1: *Gets dizzy and almost falls off a ladder.*

WORKER 2: *Remembers safety training on heat illness and takes action to help Worker 1.*

FOLLOW-UP QUESTIONS:

What are some of the risk factors you saw?

Are there other possible risk factors that can't be seen? What action would you take in this situation?

Clothing for work in hot weather

Worker 1 and Worker 2 are together in the field on a hot, sunny day where there is no shade. Worker 1 is wearing a dark sweatshirt and Worker 2 is wearing a light-sleeved button down.

WORKER 1: *Wants to take a layer off because they are getting very hot but is afraid they will get itchy and dusty and exposed to too much sun.*

WORKER 2: *Listens to Worker 1 talking about why they don't want to remove a layer and then lets them know why they chose a lightweight and light colored shirt.*

FOLLOW-UP QUESTIONS:

What would you rather wear and why?

How would you encourage workers to wear lightweight, light colored clothing?

Staying hydrated at work

Worker 1 and Worker 2 are talking at the beginning of the work day.

WORKER 1: *Says they were out late at a birthday party and had a lot of alcoholic drinks. They are now drinking a large energy drink to wake up.*

WORKER 2: *Drinking from a bottle of water and tells Worker 1 what they learned about the importance of staying hydrated*

FOLLOW-UP QUESTIONS:

What advice would you give to the person who stayed out late?

What are some ideas for encouraging co-workers to drink more water and less energy drinks?

Personal protective equipment (PPE) and heat

Worker 1 and Worker 2 are in the pesticide loading area together. Worker 1 is getting ready to apply pesticides and is putting on PPE. Worker 2 is checking on Worker 1 to make sure they are wearing PPE according to the pesticide label.

WORKER 1: *Talks about how hot it gets when they are applying pesticides because of the PPE.*

WORKER 2: *Listens to Worker 1 and tells them they need to follow the label. Worker 2 tells Worker 1 to make sure to be aware of their symptoms because sometimes it is harder to notice when wearing PPE.*

FOLLOW-UP QUESTIONS:

What other advice would you give the pesticide applicator?

What would you tell a worker if they wanted to know the difference between heat illness and pesticide poisoning?

Keeping cool in the home and community

Worker 1 and Worker 2 are talking about how hot it is in their houses during the day.

WORKER 1: *Talks about opening their windows in the morning when the air is cooler.*

WORKER 2: *Says they can't open their windows or spend time outside in their yard because the smell from the dairy is so strong. Worker 1 talks to them about places to go to cool off.*

FOLLOW-UP QUESTIONS:

What advice would you give the worker who lives close to the dairy?

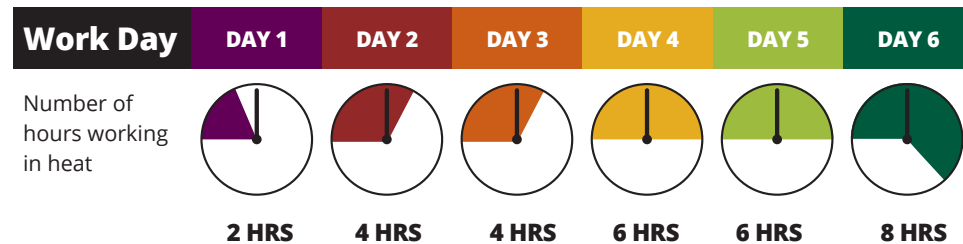
Do you have other ways to keep your home and family cool when it is hot?

Additional information

Acclimatization

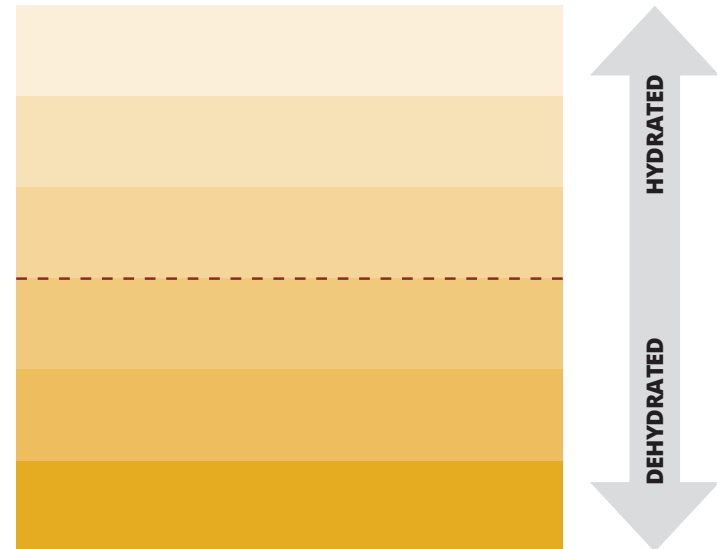
Acclimatization is the body's temporary adaptation to work in heat that occurs as a person is exposed to hot conditions over time. It usually takes a person about one to two weeks to get used to working in heat. If a person stops working in hot conditions for longer than a few days, they will need to acclimatize again.

Below is an example of an acclimatization schedule. The recommended increase to heat exposure for new and unacclimatized workers is a 20% increase per day. These are general guidelines. Each person will vary in the amount of time they take to acclimatize to the heat based on their experience and personal factors.



Urine color chart and hydration

Below is an example of a urine color chart. This chart can be copied and pasted into a separate document and printed out to give to workers.



Heat illness and pesticide poisoning

Certain symptoms of heat illness and pesticide poisoning are similar. The table below compares symptoms of heat exhaustion and organophosphate or carbamate pesticide poisoning.

Heat exhaustion	Organophosphate or carbamate pesticide poisoning
Sweating	Sweating
Headache	Headache
Fatigue	Fatigue
Dry mouth and no tears (dry membranes)	Salivation and tearing (moist membranes)
Large (dilated) pupils	Small (constricted) pupils
Nausea	Nausea and diarrhea
Fast pulse	Slow pulse
Loss of coordination	Loss of coordination
Irritability	Irritability
	Loss of consciousness

Links to resources

WA Outdoor Heat Exposure Rule for Agriculture (WAC 296-307-097):

www.lni.wa.gov/safety/rules/chapter/307/WAC296-307.PDF#PartG1

OSHA's Campaign to Keep Workers Safe in the Heat

www.osha.gov/heat/index.html

WA L&I Outdoor Heat Exposure Resources*

www.lni.wa.gov/Safety/Topics/AtoZ/HeatStress/resources.asp

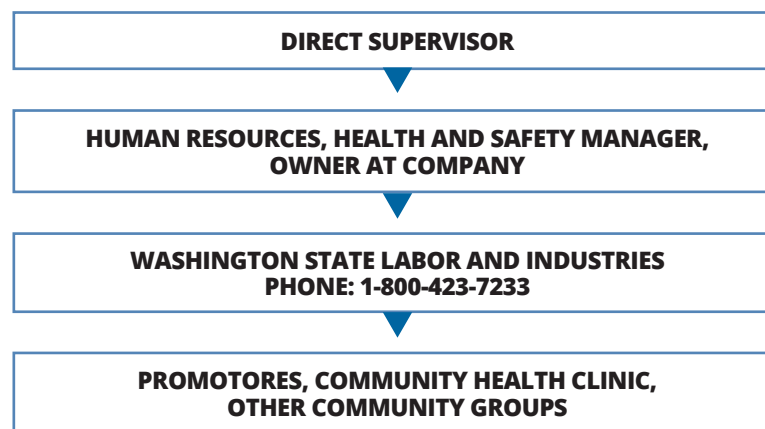
* This website has a link to a sample accident prevention program for outdoor heat exposure

Pacific Northwest Agricultural Safety and Health Center Resources

deohs.washington.edu/pnash/heat_illness

Reporting unsafe work conditions

During trainings, workers may ask what they can do if there are unsafe conditions at their workplace. The following flow diagram is the recommended hierarchy of who to contact. If a worker does not feel comfortable or cannot get in touch with the first person, then they should move down the list.



The following information should be collected:

- Address or location of workplace
- Date and time
- Description of hazard
- Record of action taken – who worker talked to and their response
- Photographs if possible

This information does not need to be typed on a formal report, it just needs to be written somewhere by the worker (or a friend or coworker if the worker cannot write) and can be used as documentation.

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