

# Recognition, Management, and Prevention of Heat- Related Illness Among Agricultural Workers

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# We will learn...

- Identify symptoms of heat-related illness
- Describe prevention strategies for heat-related illness
- Access resources to address acute heat-related illness among agricultural workers

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Stories from the field





"We're done at about 10 or 10:30 because after that it's too hot to do the work. But every year you hear about workers who faint because of the heat and some even die. You're in danger of fainting if you're working too fast in the heat."

*Lorena*

[Stories from the Field](#), documented by David Bacon

# Heat stress

- Rise in core body temperature when the body can't get rid of excess heat
- May lead to heat exhaustion, heat cramps, heat stroke, death

## Work conditions create risk

- Hot, humid conditions
- Physically-demanding work
- Protective clothing and PPE needed for work, but trap heat





"It's hard work because the foreman constantly rushes us... Many workers have died in the fields due to dehydration or illness. I have seen men and women faint. I was picking chiles once and a woman worker told the foreman she didn't feel well. The foreman took her out of the field. Three days later it was 115 degrees out and another young woman, just 21 years old, fell ill... When we returned we saw the ambulance taking her away because she had fainted."

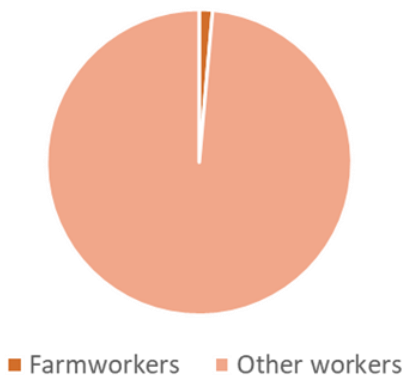
*Marisol*

[Stories from the Field](#), documented by David Bacon

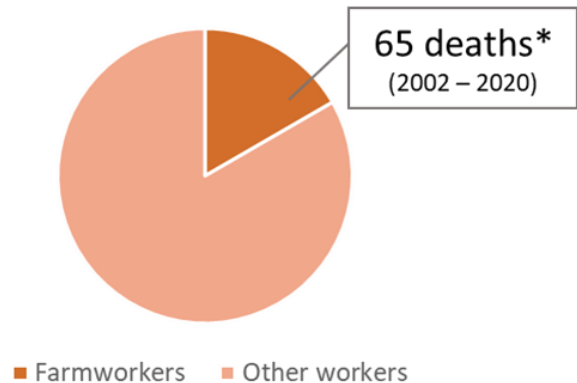
# Heat deaths among farmworkers

- Farmworkers are 1.4% of all employed workers in the U.S.,<sup>1</sup> but represent about 15% of occupational heat fatalities between 2002 and 2020.<sup>2</sup>

Farmworkers as a percentage of employed workers



Farmworkers as a percentage of occupational heat-related fatalities



\*Likely an undercount. Deaths in which heat was a contributing factor are not always recognized as heat-related. Criteria for cause of death classification also vary from one jurisdiction to another.

<sup>1</sup>USDA Economic Research Service. *Ag and Food Sectors and the Economy*. Updated November 8, 2021. Available at: <https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/ag-and-food-sectors-and-the-economy/>. Last accessed December 10, 2021.

<sup>2</sup>Calderon I. *Temperatures continue to rise and farmworkers continue to be at risk*. Midwest Center for Investigative Reporting. October 21, 2021. Available at: <https://investigatamidwest.org/2021/10/21/temperatures-continue-to-rise-and-farmworkers-continue-to-be-at-risk/>. Last accessed December 3, 2021.

Farmworkers are  
**20 times** more  
likely to die from  
heat related illness  
than other workers.







"In addition to low pay, there are a lot of contractors out there that don't allow workers a break at the required time, or even a break at all. At work I want the contractor to consistently let us take breaks at our scheduled times of 9:00 a.m. and noon. There are many contractors that don't rehire us if we don't work the way they demand. They speed up the machine and we're expected to keep up."

*Miguel*

[Stories from the Field](#), documented by David Bacon

A black silhouette of a person's head and shoulders is positioned on the left side of the image. A large, black-outlined thought bubble is connected to the top of the head. Inside the thought bubble, the text of the question is written. A smaller, solid black circle is located below the main thought bubble, connected to it by a thin line.

**Question:**

How many states  
have a standard to  
protect workers  
from heat?

# Heat Stress and Regulations

No National Heat Standard

States

California

Washington

Oregon

Minnesota  
(indoor)

Maryland  
2022

# Worker protection

- Only a few states have heat stress standards
- There is no federal heat standard
- NIOSH first proposed details of a potential heat standard to federal OSHA in 1972
- In October 2021 OSHA began the process to create a heat standard covering indoor & outdoor workers





# Asuncion Valdivia Heat Illness and Fatality Prevention Act

"I remember telling my husband that I didn't want to go back to work. We were picking lettuce...We were following the machine, pulling empty boxes from it, and then lifting them back up once they were full. We were working in 110 to 115 degree heat. Not just anyone can do this job. "

*Ramona*

[Stories from the Field](#), documented by David Bacon

A black silhouette of a person's head and shoulders is positioned on the left side of the image. A large, black-outlined thought bubble originates from the top of the head, containing text. A smaller, black-outlined circle is located below the main thought bubble, connected to it by a thin line.

**Question:**

**Who are the most  
vulnerable to heat-  
related illness?**



## Who are the most vulnerable?

- Work outside
- Lower socio-economic status
- Children
- Pregnant woman
- Chronic illness
- Migrant





Packers



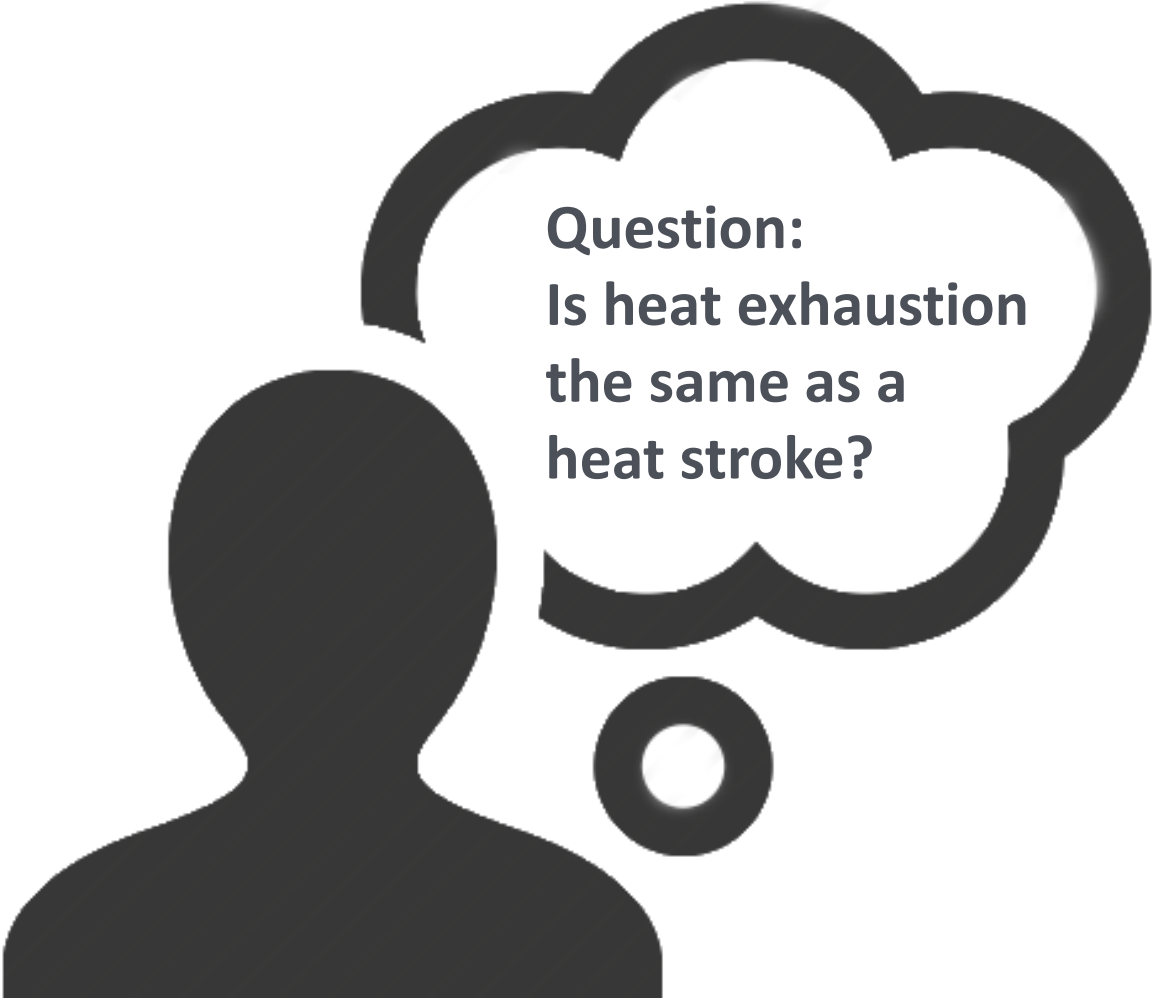
Restaurant Workers



Construction Workers



Farmworkers

A black silhouette of a person's head and shoulders is positioned on the left side of the image. A large, black-outlined thought bubble is connected to the head by a smaller, black-outlined circle. The text is contained within the thought bubble.

**Question:**  
**Is heat exhaustion**  
**the same as a**  
**heat stroke?**

What are the symptoms  
of heat fatigue?

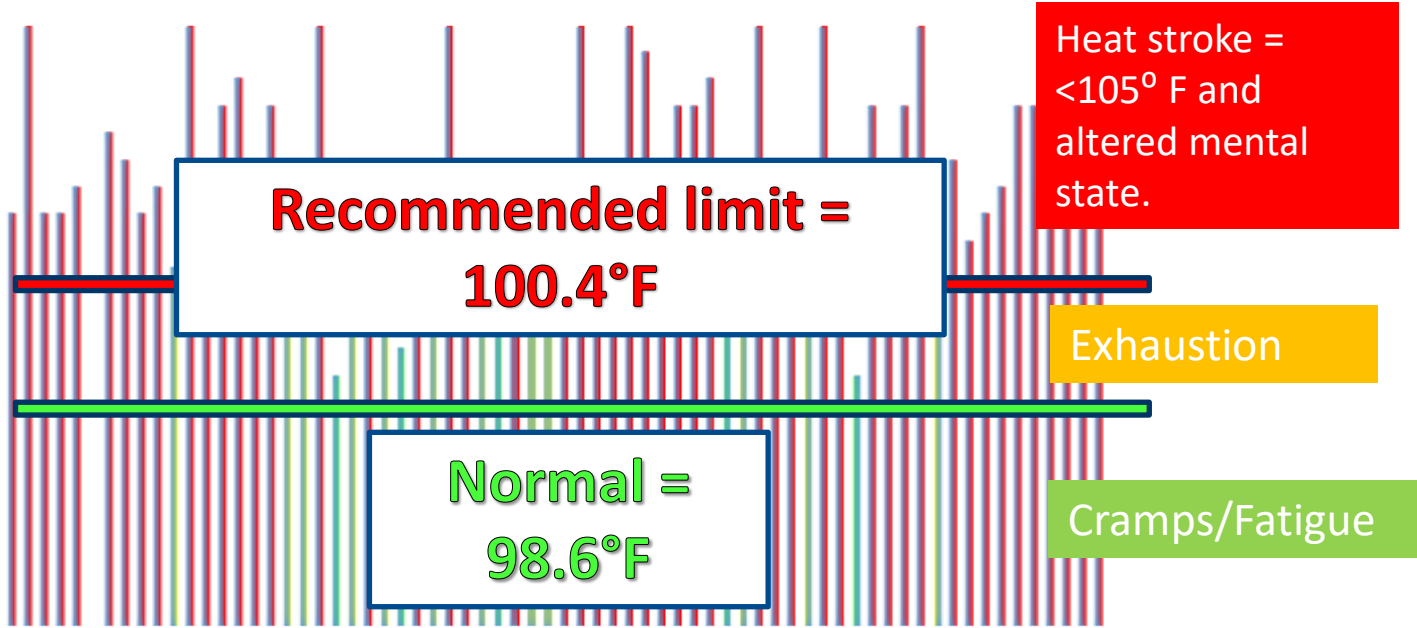
Heat cramps?

Heat exhaustion?

Heat stroke?



# Internal Temperature



# Heat Rash/Cramps/Fatigue

- Clusters of red bumps on skin
  - Often on neck, upper chest, folds of skin
- Cramps
- Pain
  - Usually in the stomach, legs and arms



# Heat Exhaustion

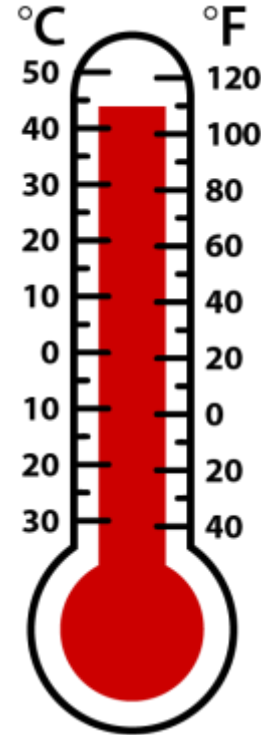
- Cool, moist skin
- Heavy sweating
- Headache
- Nausea or vomiting
- Dizziness
- Light headedness
- Weakness
- Thirst
- Irritability
- Fast heart beat



# Heat Stroke

- Fever (Hyperthermia) <math>< 105^{\circ}\text{F}</math>
- Confusion/Altered mental status
- Delirium
- Red or dry skin
- Lack of sweating despite heat
- Seizures
- Unconsciousness
- Death

**The person's internal temperature and mental state are what differentiate heat exhaustion from heat stroke.**





**What  
factors can affect  
heat stress?**



# Environment



Temperature



Humidity



Shade



Wind

# Dehydration



**Before working  
(AM)**



**After working  
(PM)**

$\frac{1}{2}$  of the workers were dehydrated before work.  
 $\frac{3}{4}$  were dehydrated upon leaving work.

# Prevention!





Water



Rest



Shade

Long-sleeved,  
cotton shirts,  
long pants,  
and a wide-  
brimmed hat  
will protect  
you the best!



# Avoid Certain Drinks







Another case...

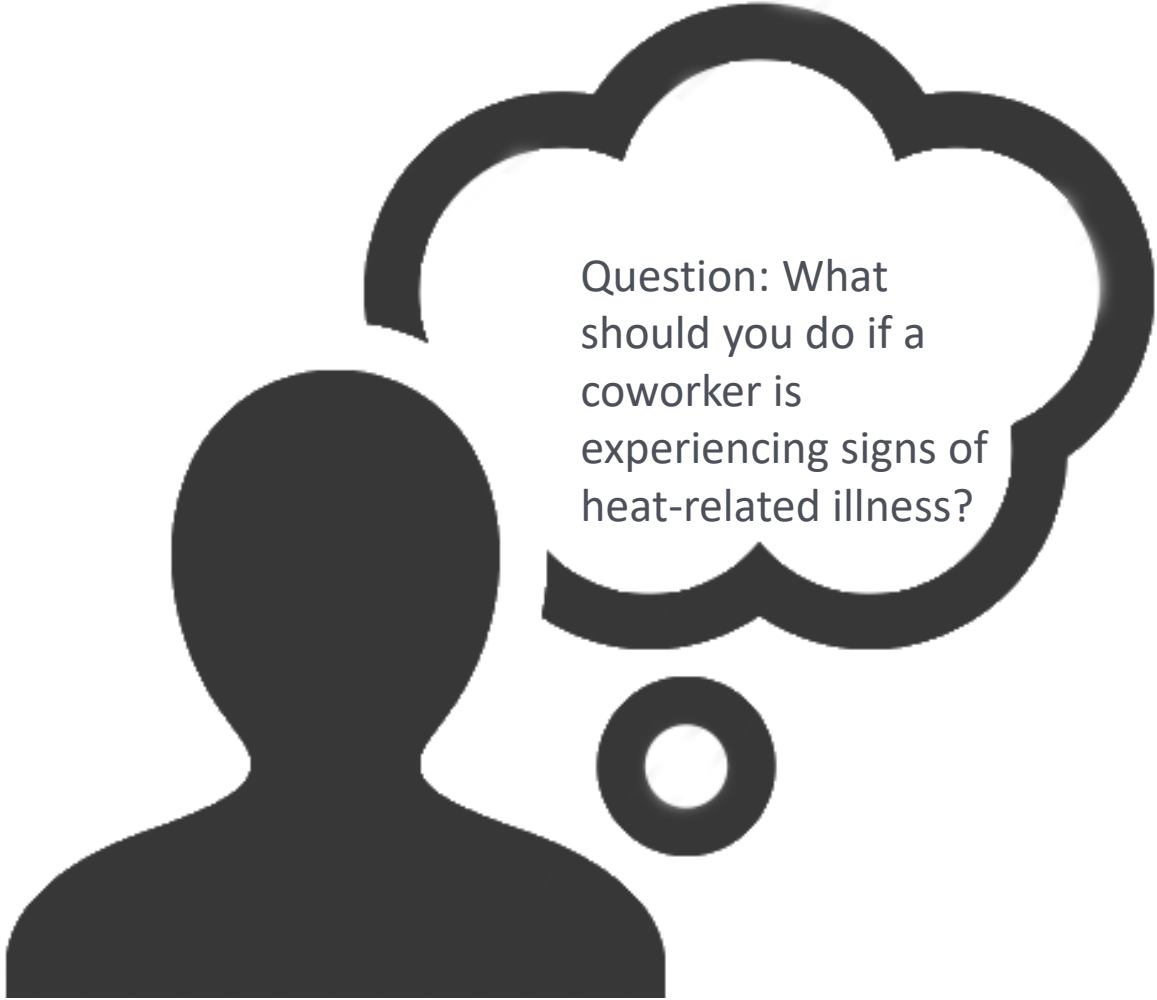
# Acclimatization

Temperature



Task



A black silhouette of a person's head and shoulders is positioned on the left side of the image. A large, black-outlined thought bubble is connected to the head by a smaller, black-outlined circle. Inside the thought bubble, the following text is written in a dark gray, sans-serif font:

Question: What should you do if a coworker is experiencing signs of heat-related illness?

# Treatment

Move to a shaded area

Loosen or remove clothing

Drink water

Splash cool water on the body- especially on the chest

**SEEK  
MEDICAL  
ATTENTION**

# Emergencies: Dial 911



- Know your work address
- Explain the condition of the worker
- Offer the worker first aid



**Inform your supervisor!**



## Protecting Workers from Heat Stress

### Heat Illness

Exposure to heat can cause illness and death. The most serious heat illness is heat stroke. Other heat illnesses, such as heat exhaustion, heat cramps and heat rash, should also be avoided.

There are precautions your employer should take any time temperatures are high and the job involves physical work.

### Risk Factors for Heat Illness

- High temperature and humidity, direct sun exposure, no breeze or wind
- Low liquid intake
- Heavy physical labor
- Waterproof clothing
- No recent exposure to hot workplaces

### Symptoms of Heat Exhaustion

- Headache, dizziness, or fainting
- Weakness and wet skin
- Irritability or confusion
- Thirst, nausea, or vomiting

### Symptoms of Heat Stroke

- May be confused, unable to think clearly, pass out, collapse, or have seizures (fits)
- May stop sweating

### To Prevent Heat Illness, Your Employer Should

- Establish a complete heat illness prevention program.
- Provide training about the hazards leading to heat stress and how to prevent them.
- Provide a lot of cool water to workers close to the work area. At least one pint of water per hour is needed.



For more information:  
**OSHA** Occupational Safety and Health Administration  
www.osha.gov (800) 321-OSHA (6742)

OSHA 3764-108-2014

# OSHA Employer Recommendations

- Employer should monitor conditions and implement and adjust a heat plan throughout the workday.
- To create a heat plan, the employer should:
  - ✓ identify heat hazards;
  - ✓ recognize early symptoms of heat stress;
  - ✓ administer first aid for heat-related illnesses; and
  - ✓ activate emergency medical services quickly when needed.

OSHA does not have a heat stress standard. Employers must provide workplaces free of excessive heat.

Heat Index	Risk Level	Protective Measures
Less than 91°F	<u>Lower (Caution)</u>	Basic heat safety and planning
91°F to 103°F	<u>Moderate</u>	Implement precautions and heighten awareness
103°F to 115°F	<u>High</u>	Additional precautions to protect workers
Greater than 115°F	<u>Very High to Extreme</u>	Triggers even more aggressive protective measures



## Risk level: Lower

- Provide drinking water
- Plan ahead and provide worker heat safety training
- Encourage workers to wear sunscreen and protective clothing

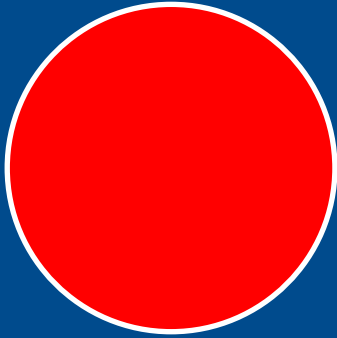


## Risk level: Moderate

- Review heat stress - how to prevent it, how to recognize it and what to do if someone is sick
- Schedule frequent breaks in a cool, shaded area
- Make sure workers adjust to climate
- Establish buddy system







## Risk level: High

- Alert workers of high-risk conditions
- Limit physical exertion, adjust work activities to be less strenuous
- Establish and enforce work/rest schedules



## Risk level: Extreme

- Conduct physiological monitoring - pulse, temperature
- Stop work if essential control methods are inadequate or unavailable





## In Summary...Heat fatigue, heat exhaustion and heat stroke are different.

- Heat fatigue and exhaustion can be reversed.
- Heat stroke can lead to death, but it is preventable.
- Stay hydrated!
- Take breaks in the shade.
- Acclimate by gradually increasing the workload and taking more breaks during the first week of work.
- Eat foods that contain salt and electrolytes and avoid drinks that can dehydrate.
- Use the buddy system. Encourage each other to drink water, stay in the shade, and take breaks.
- Wear appropriate clothing.
- Stay up-to-date on the temperature each day.
- Know the signs and symptoms of heat-related illness. Teach workers about the dangers of heat and how to avoid serious injury.

# Resources





# Heat-Related Illness Clinician's Guide

June 2021

## Introduction

Agricultural workers are at significant risk for heat stress. Heat stress results when the body cannot get rid of excess heat and its core temperature rises.<sup>1</sup> Heat stress may lead to more severe heat illness including heat exhaustion, heat cramps, heat stroke, and even death if left untreated.<sup>2</sup> Agricultural work, which requires performing physically demanding work for long hours in hot and sometimes humid weather, places workers at high risk.

## Heat Illness Prevention

### What is heat illness?

Heat illness is a medical condition resulting from the body's inability to cope with a particular heat load and includes, but is not limited to, heat cramps, heat rash, heat exhaustion, fainting, and heatstroke. Prolonged or intense exposure to hot conditions and heavy physical work even in cooler conditions can lead to your body overheating. Symptoms of heat illness may not be recognized initially and can quickly progress.

### Why is it important to know about heat illness?

Heat illness is preventable but, if left unchecked, could lead to death. People who work outside, especially in the summer, are exposed to heat and can get heat illness. Heat illness can also lead to injuries. Workers are more likely to get injured if they get tired or dizzy from the heat while working. Heat exposure can also lead to heatstroke, a condition that can be fatal. What you learn here will prepare you for helping your co-workers and yourself stay safe when working in hot weather.



Dairy Safety and Health

Heat Illness Prevention

Pesticides and Health

Sexual Harassment  
Prevention

Wildfire Smoke Safety

Orchard Injuries

## Heat Illness Toolkit

### Heat Illness Prevention Materials

Heat Education & Awareness Tools (HEAT) is a set of resources and tools developed in collaboration with agricultural workers and educators to promote workplace safety and health in agriculture. The HEAT Toolkit provides a training guide for the identification, prevention, and treatment of heat illness and is available in both English and Spanish formats. It includes a heat awareness mobile application, suggestions on how to monitor weather conditions (coming soon), workshop posters, and interactive educational materials for workers. The facilitator's guide and curriculum provide a comprehensive approach to heat illness prevention by addressing risk factors for agricultural workers at the individual, workplace, and community levels.




### HEAT ILLNESS RESOURCE PAGE >

#### Ordering Heat Toolkits

Links for all HEAT materials are available for PDF download below. Materials are available for bulk purchase through our print and ship program. Print one FREE HEAT Toolkit (value of \$35). This offer is available to employees, farmers, and educators with promo code. Please email [print@pnash.edu](mailto:print@pnash.edu) or call (206) 616-1950 to request a promo code.

[View Print & Ship Materials Order >](#)

#### Heat Education and Awareness Tools (HEAT)

 <p><b>Facilitator's Guide</b> A train-the-trainer guide for the identification, prevention, and treatment of heat illness in outdoor agricultural workers.</p> <p><a href="#">DOWNLOAD GUIDE &gt;</a></p>	 <p><b>Heat Education &amp; Awareness Tools (HEAT)</b></p>	 <p><b>Educación y herramientas de sensibilización sobre el calor</b></p> <p><b>Guía para facilitadores</b> Una guía para educar al educador para la identificación, prevención y tratamiento de enfermedades relacionadas con el calor en trabajadores agrícolas al aire libre.</p> <p><a href="#">DOWNLOAD GUIDE &gt;</a></p>
<b>Posters</b>		
 <p><b>Symptoms and treatment for heat illness</b> Symptoms of heat illness can be mild or severe. Know the symptoms and treatment to prevent serious heat stress and death.</p> <p><a href="#">DOWNLOAD POSTER &gt;</a></p>	 <p><b>Risk factors for heat illness</b> Awareness of your risk factors can help prevent heat illness.</p> <p><a href="#">DOWNLOAD POSTER &gt;</a></p>	 <p><b>Clothing for work in hot weather</b> Wear light colored, lightweight clothing and a hat when working in the heat.</p> <p><a href="#">DOWNLOAD POSTER &gt;</a></p>
 <p><b>Staying hydrated at work</b> If you are thirsty, you are already dehydrated.</p> <p><a href="#">DOWNLOAD POSTER &gt;</a></p>	 <p><b>Personal protective equipment (PPE) and heat</b> PPE and work covers can be much hotter than regular work clothes.</p> <p><a href="#">DOWNLOAD POSTER &gt;</a></p>	 <p><b>Keeping cool in the home and community</b> Keep your family cool during hot weather.</p> <p><a href="#">DOWNLOAD POSTER &gt;</a></p>

About

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- Migrant Health Overview
- Migrant/Seasonal Farmworkers Profile

### HEALTH SYSTEMS

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- Patient Centered Medical Home
- National Advisory Council on Migrant Health

### HEALTH JUSTICE

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- Farmworker Health Network
- Position Statements
- Worker Protection Standard

### RESOURCES & CLINICAL TOOLBOX

### ISSUES IN MIGRANT HEALTH

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- COVID-19
- COVID-19 Vaccine Awareness Campaign
- Cancer
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- Emergency Preparedness, Response and Recovery
- Family Violence
- HIV/AIDs
- Hepatitis
- Hypertension
- Immunizations
- Oral Health
- Tuberculosis
- Women's Health
- Zika

### Report Pesticide Exposures



### ENVIRONMENTAL AND OCCUPATIONAL HEALTH

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- Heat-related Illness
- Dairy Worker Information on Heat Stress
- ESL Health & Safety



Justice Award

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Navigation bar with five items:

- FAQ: The COVID-19 Vaccine and Migrant & Immigrant Patients
- Read the Latest on Our Blog
- Engage a Case Manager for a Mobile Patient
- Medical Review for Immigrants
- Advance Health Justice



## Welcome to the Resource Center!

Use the search bar on the right to search using key words, or browse through all of our resources by topic by clicking on the drop-down menus on the left. Some of our featured resources are posted below.



### Heat-Related Illness Clinician's Guide (Updated Aug. 2021)

Resource for clinicians on the prevention and treatment of heat-related illness among agricultural workers.

↓ 2021\_Heat-Related Clinicians Guide

TAGS



### Fact sheet: Legislation Would Provide Worker Protections from Heat Stress

The "Asunción Valdivia Heat Illness and Fatality Prevention Act of 2021" seeks to address safety and health concerns in relation ...

↓ Heat Stress Bill Fact Sheet

TAGS

FACT SHEET

SEARCH RESOURCES

## Immigration & Labor

- ▶ Bracero Program (1942-1964)
- ▶ Current Guestworker Programs
- ▶ Immigration Enforcement and DACA
- ▶ International Labor Issues
- ▶ Labor Rights for Farmworkers
- ▶ Legislative Proposals on Agricultural Workers

## Health

- ▶ Farmworker Health Issues
- ▶ Healthcare Access
- ▶ Occupational and Environmental Health
  - Emergency Preparedness
  - Field Sanitation
  - Grain Handling
  - ▶ Heat Illness
  - Housing

A close-up photograph of a hand holding a clear glass filled with beer. The beer has a thick, light-colored head of foam. The background is dark and out of focus, showing a person's face and a white shirt. The text "Thank you for your participation!" is overlaid at the bottom in white.

Thank you for your participation!

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