Heat Education & Awareness Tools (HEAT)

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

©2024 University of Washington.

Duplication or distribution for non-commercial purposes is welcome, provided permission is requested through the UW Pacific Northwest Agricultural Safety and Health Center.

Funded through CDC-NIOSH # 5 U54 OH 007544-18-00

This work by PNASH Center, UW is licensed under Attribution-NonCommercial-NoDerivatives 4.0 International. To view a copy of this license, visit http://creativecommons.org/licenses/by-nc-nd/4.0/

Table of Contents

Introduction

What is heat illness?

Heat illness is a medical condition that occurs when the body overheats. This can occur when a person is exposed to hot conditions and heavy physical work. However, heat illness can also occur in cooler conditions if a person is exposed to heat over a long period of time. Heat illnesses include heat cramps, heat rash, heat exhaustion, rhabdomyolysis (muscle breakdown), fainting, and heat stroke. 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?

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 may be more likely to get injured if they get tired or light-headed from the heat while working. Heat illnesses are preventable but, if left unchecked, could lead to death. What you learn here will prepare you for helping your co-workers and yourself to stay safe when working in hot weather.

What is the Heat Toolkit?

The HEAT (Heat Education Awareness Tools) Toolkit is a set of interactive and effective training tools to promote heat safety in agriculture. It was developed and tested in collaboration with agricultural workers and educators. Evaluation of the HEAT training with 83 Spanish-speaking workers found that workers who received the training improved their average knowledge score about four times more than workers who did not receive the training.[1]

How will this training help in complying with State Outdoor Heat Rules?

Employers are responsible for providing workplaces free of known safety and health hazards, including hazards related to heat exposure. Employers and supervisors should review and follow the outdoor heat requirements in their state.

The HEAT Toolkit can be used as part of annual heat training and as a refresher on hot days. To use the HEAT Toolkit to meet annual training requirements deliver the entire training as presented in this training guide. Additional training requirements typically include providing worksite-specific information about heat safety policies and procedures in the employer's accident prevention plan. This training can also be provided to supervisors. If supervisors go through the training provided in this guide, they can then deliver training to workers. Please refer to the requirements in your state for more information.

For outdoor heat requirements in Washington for Agriculture, see WAC 296-307-097, and in Oregon, see OAR 437-002-0156.

Regional and National Resources

- **Oregon OSHA**
  https://osha.oregon.gov/Pages/topics/heat-stress.aspx
- **Washington State Department of Labor and Industries**
  www.Lni.wa.gov/HeatSmart
- **CDC**, Heat Stress
  https://www.cdc.gov/niosh/topics/heatstress/
- **OSHA**, Heat Illness Prevention
  https://www.osha.gov/heat
- **PNASH Center**, Heat Illness Prevention
  https://deohs.washington.edu/pnash/heat_illness

Disclaimer

Use of this training is voluntary, not designed to meet all employer requirements of outdoor heat exposure rules, and does not create or modify legal obligations. The content of this training is not intended to be a substitute for professional medical advice. Individuals should seek the advice of a qualified health provider if there are questions about heat exposure and health effects.

1. Marquez D, Krenz JE, Chavez Santos É, Torres E, Palmández P, Sampson PD, Blancas M, Carmona J, Spector JT. The Effect of Participatory Heat Education on Agricultural Worker Knowledge. J Agromedicine. 2023 Apr;28(2):187-198. doi: 10.1080/1059924X.2022.2058667. Epub 2022 Apr 17. PMID: 35345983; PMCID: PMC9573936.

How to use this book

This book is a tool for educators, community health advisors, and workplace managers and supervisors for delivering education on the identification, prevention and treatment of heat illness. The book is designed to be interactive and comprehensive and for use in a classroom setting or in the field.

There are 7 topics in this book, each with a visual aid that can printed as a poster or handout or projected on a screen. The following are descriptions of the topics and visual aids:

1. **Types of heat illness and treatments**
   The types of heat illness are listed with symptoms depicted in the illustrations. The types of heat illness are on a color coded background, from mild to severe. Recommended treatments are listed next to each type.

2. **Risk factors for heat illness**

   Three categories of risk factors for heat illness are represented: personal, work-related, and weather-related factors. Specific risk factors are shown within each category.

3. **Clothing for work in hot weather**

   Photos of workers in different clothing ensembles are shown. The appropriate clothing ensembles for working in the heat are in the light green box under the green check mark. The clothing ensembles that are not recommended for working in the heat are in the light red box under the red 'x'.

4. **Staying hydrated at work**

   Quantities of water are shown using two different containers: an eight-ounce bottle and a four-ounce cone. The recommended amount of water that should be consumed during hot weather is shown at the bottom with color-coded emoji drops above each quantity. The colors and facial expressions on the emoji drops represent the urine color and hydration level, with the lightest yellow happy face being the most hydrated and the darkest yellow face with 'x' eyes being the most dehydrated. Each cone represents four ounces of water, and the number of cones is how much a worker needs to drink each hour in hot weather to remain at the hydration level represented by the color-coded emoji drop.

5. **Personal protective equipment (PPE) and heat**

   Workers are shown in different types of personal protective equipment (PPE) as well as regular work clothes. The number of thermometers next to each type of PPE symbolizes how hot a worker can get wearing that type of PPE compared to regular work clothes.

6. **Keeping cool in the home and community**

   Images of inside and outside of the home are shown with recommendations on how to keep cool in the heat. Icons of places to go in the community to keep cool are shown at the bottom.

7. **Adjusting to the heat (Acclimatization)**
   Images of workers acclimatizing to working in the heat are shown with recommendations for how to modify work activities. An example of an acclimatization schedule is provided.

The topics can be presented in one session. Topics can also be presented as stand-alone modules before a hot day at work to reinforce messages.

Each topic has three parts:

1. **Group discussion session to engage participants**
   Start by asking workers the group discussion questions to learn more about their perspectives and draw out their knowledge. There is a sample response to one group discussion question for each topic to provide an idea of the types of responses that might come up during training.

2. **Delivery of education on the topic**
   Show the visual aid as a poster or handout or on a screen and review the information with the workers. There is a prompt to display the visual aid after the group discussion questions in each section.

3. **Reinforcement of key messages through an activity and review of take-home messages**
   Ask workers what they learned and have them partner up for the activity.

   The activity for each section is labeled with  .

   Finish the topic by reviewing take-home messages which are labeled with  .

Each training topic takes approximately ten to fifteen minutes to go through and can be modified to fit the time allotted. For example, the group discussion can be shortened or the activity can be omitted if there are time constraints.

Throughout the guide, there are highlighted boxes labeled with  and "Notes for the facilitator." These boxes contain extra information we thought would be helpful for the facilitator.

The final sections contain additional resources that can be integrated into training sessions:

- Prevention checklist
- Heat illness case studies
- Role plays
- Additional information
- Supplemental material: Acclimatization
- Best practices for heat illness in agriculture

Symptoms and treatments for heat illness

Group discussion questions

- How do you feel when you work outside on a hot, sunny day?
- What are some of the signs and symptoms of heat illness?

Sample question and response

FACILITATOR: *"Have you or a coworker ever gotten get sick from the heat? What did you do?"*

PARTICIPANT: *"Sometimes I get a headache after working when it is very hot outside. I will rest in the shade but not drink cold water. If I drink cold water when my body is too hot it will make me even more sick."*

FACILITATOR: *"It is true that many of us will avoid drinking cold water when our bodies feel hot. But healthcare providers we respect tell us that the best way to stay hydrated and cool our bodies so we don't get heat stroke is to drink cool water and to use cool, wet cloths."*

NOTES FOR THE FACILITATOR

Cultural-related beliefs may be brought up during discussions. It is important to acknowledge and respect cultural beliefs but also point out the importance of treating someone appropriately if they have or are developing a heat illness. Try relating to the participant's response by responding with "us" or "we."

Display poster and review types of heat illness and treatments.

Symptoms and treatments for heat illness

Heat rash or **prickly heat** is red, itchy skin bumps caused by blocked sweat glands that prevent sweat from evaporating. To treat this, keep skin cool, clean, and dry. Calamine lotion can be used for itchiness.

Heat cramps are painful muscle spasms in the arms, legs, and belly caused by heavy physical work in the heat. If someone gets heat cramps, they should rest in a cool place. Drinking some sports drinks (try to find a sports drink with low sugar) may help. Seeing a healthcare provider is recommended if cramping is severe or does not go away.

Fainting and light-headedness is caused when blood vessels get larger to help the body lose heat. Resting in a cool place, lying down, and elevating legs is recommended. Drinking some sports drinks (try to find a sports drink with low sugar) may help. Seeing a healthcare provider is recommended if symptoms do not improve after lying down and elevating legs.

Heat exhaustion is when your body cannot stay cool and is not getting enough hydrating fluids. Symptoms include:

- Cool, clammy, sweaty, pale skin
- Weak, tired, light-headed, headache
- Feeling sick to stomach, vomiting
- Decreased/dark urine
- Body temperature between 98.6°F-104°F(37°C-40°C)

Resting in a cool place, lying down, and elevating legs is recommended. Drinking some sports drinks (try to find a sports drink with low sugar) may help. Seeing a healthcare provider is recommended if symptoms do not improve after lying down and elevating legs.

Heat stroke can be fatal. This is when your body cannot control its own temperature to stay cool enough. Symptoms include:

- Very high body temperature above 104°F (40°C)
- Hot, dry, red skin (some sweat possible)
- Feeling sick to stomach, vomiting
- Confusion, irritability, seizure, no response

Heat stroke is an emergency! Call 911 immediately!
Resting in a cool place, lying down, and elevating legs is recommended. Have the person lie on their side if they are sick to their stomach. Remove heavy, outer clothing. Wet and fan. Place cold, wet cloths over the head, trunk, arms, and legs. Fan, and exchange cloths to keep them cool. Use ice if available.

NOTE ABOUT KIDNEY INJURY / RHABDOMYOLYSIS

Rhabdomyolysis can happen with heat exposure and physical exertion. Muscles break down, which can cause damage to the kidneys. Symptoms include muscle cramps, very dark (cola-colored) urine, and overall weakness. In addition to rhabdomyolysis, kidney injury can be caused by dehydration and low blood flow. Stop activity, drink liquids, and see a healthcare provider.

Activity

Prepare by having pieces of paper with the types of heat illness written on them (with illustrations if needed) that can be handed out. Have participants pair up and assign each pair a type of heat illness by handing them the paper with the heat illness type so only one person can see the type. This person will act out the symptoms, and the other person will help them with the correct treatment. If time allows, the pairs can reenact for the group or the papers can be traded with other pairs.

Take-home messages

Don't ignore early symptoms. Ignoring symptoms will only lead to more serious heat illness and more missed time at work.

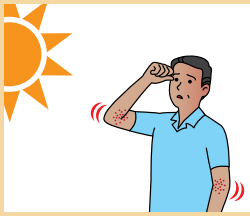
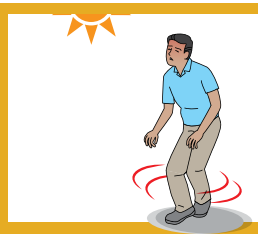
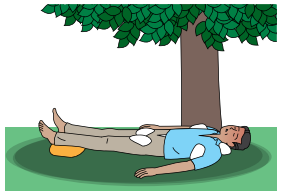
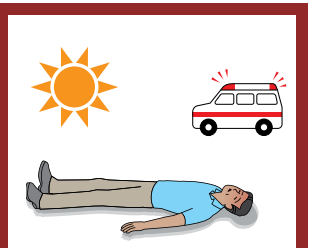
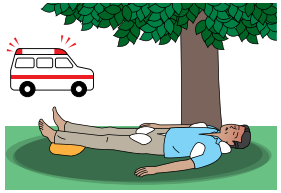
Heat stroke is a medical emergency! If you see someone with heat stroke symptoms, call 911 immediately and be able to tell the dispatcher where you are, what happened, and a phone number in case you get disconnected.

NOTES FOR THE FACILITATOR

When you call 911, make sure to give instructions to help the ambulance reach your location. Make sure everyone can say "heat stroke" in English when they call 911. Do a practice round of saying "heat stroke" since there are dispatchers who do not understand Spanish. You can pretend to be the dispatcher and have the workers call 911 and explain what has happened.

Symptoms and treatments for heat illness

Symptoms of heat illness can be mild or severe. Know symptoms and treatments to prevent serious heat illness and death.

TYPES AND SYMPTOMS		TREATMENTS	
Rash *Red, itchy skin bumps*		• Keep skin clean and dry • Use calamine lotion	
Cramps *Painful muscle spasms in the arms, legs, and belly*		• Water, rest, shade • Have a snack • Tell supervisor	
Dizziness or Fainting		• Water, rest, shade • Elevate legs • Tell supervisor	
Exhaustion • *Feeling sick to stomach, vomiting* • *Cool, clammy, sweaty, pale skin* • *Weak, tired, light-headed, headache*		• Water, rest, shade • Elevate legs • Lay on side if vomiting • Cool, wet cloths • Tell supervisor	
EMERGENCY! CALL 911! **Heat Stroke** • *Feeling sick to stomach, vomiting* • *Hot, dry, red skin (some sweat possible)* • *Confusion, irritability, seizure, no response*		• Move to shade • Lay on side if vomiting • Place cool, wet cloths over head, chest, arms and legs, use ice. Replace cloths to keep them cool. • Elevate legs and fan • Tell supervisor and call 911	

Risk factors for heat illness

Group discussion questions

- What kind of weather can cause heat illness?
- What are some personal risk factors for heat illness?

Sample question and response

FACILITATOR: *"What are some reasons you might get heat illness at work?"*

PARTICIPANT: *"When we are harvesting and the weather is hot, we have to carry heavy loads up and down ladders and to the bins."*

FACILITATOR: *"Yes, heavy physical work in the heat can cause heat illness. Many times we don't have control over the type of work we have to do, but we do have control over some things like the type of clothing we wear and what we choose to drink. Choosing light-colored clothing and drinking water are actions we can take to reduce our chances of getting heat illness."*

NOTES FOR THE FACILITATOR

Questions about how to prevent heat illness may come up during the group discussion. Review prevention strategies in the Prevention Checklist at the end of this guide to provide recommendations. The Washington State Outdoor Heat Rule for Agriculture (WAC 296-307-097) states that employees are responsible for monitoring their own personal risk factors, so it is important for workers to be aware of their risk factors as well as preventative strategies.

Display poster and review risk factors for heat illness.

Activity

Hand out copies or display the Prevention Checklist. Have participants pair up and pick a risk factor. Ask them to discuss the risk factor and what they could do about the risk factor to reduce the risk of heat illness using strategies in the Prevention Checklist. Have participants check or write three prevention strategies they already practice or will start practicing.

Risk factors for heat illness

Risk factors, or causes, of heat illness are split up into three categories: weather, work-related, and personal risk factors:

Weather risk factors

- High temperature
- High humidity
- Direct sun
- No wind or hot wind

Work-related risk factors

- Not drinking enough water
- Not being acclimatized
- Not enough shaded rest breaks
- Wearing lots of layers or non-breathable clothing
- Having a heavy workload
- Working near hot machinery
- Working inside in an area with no cooling or ventilation

Personal risk factors

- Out of shape
- Sleep deprived
- Diabetes
- Heart disease
- Previous heat illness
- Having a cold, flu, or fever
- Coming to work dehydrated
- Certain medications, for example for:
  - High blood pressure
  - Heart disease
  - Mental health
  - Thyroid
  - Constipation
  - Losing weight
  - Allergies

Take-home messages

There are weather-related, work-related, and personal risk factors for heat illness. Make simple changes to reduce risks you can control. When there are risk factors you can't control, pay more attention to how you are feeling on hot days or when you are doing heavy physical work. Detecting early symptoms helps prevent more severe heat illness.

Certain medications and health conditions can make you more likely to get heat illness. It is important to talk to your healthcare provider if you have questions about your health and working in the heat.

Risk factors for heat illness

There are personal, work-related, and weather-related causes of heat illness.
Awareness of your risk factors can help prevent heat illness!

Personal

Coming to work dehydrated

Heart disease

Diabetes

High blood pressure

Not enough sleep

Certain medications

Previous heat illness

Out of shape

Pregnancy

Cold, flu, fever

Work

Heavy workloads

Working near hot machines

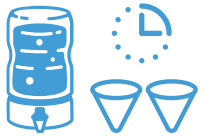
Indoors with no cooling or ventilation

Wearing personal protective equipment

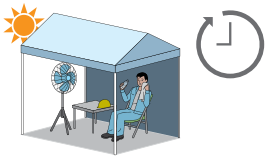
Wearing dark clothes and lots of layers

Too much sugar

Not being used to hot weather

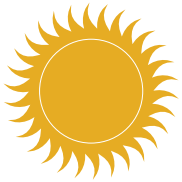


Not drinking enough water

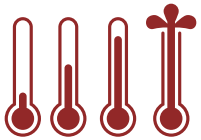


Not enough shaded rest breaks

Weather



Direct sun



High temperature

No wind or hot wind

High humidity

Clothing for work in hot weather

Group discussion questions

- What clothing is good for hot weather and why?
- What clothing is NOT good for hot weather and why?

Sample question and response

FACILITATOR: *"How do you choose the type of clothing you wear for work?"*

PARTICIPANT: *"When it is sunny and dusty, I wear long sleeves to protect my skin from sun and dust. It can also get itchy when working around certain types of crops."*

FACILITATOR: *"Protecting your skin is very important and healthcare providers recommend wearing long sleeves to protect your skin from sun damage. They also recommend wearing lightweight, light colored clothing to help prevent heat illness. Wearing layers of long-sleeved shirts can be helpful as you can remove the outer layers as it gets warmer and still protect your skin."*

NOTES FOR THE FACILITATOR

Bring or wear an example of appropriate clothing for working in hot weather.

Display poster and review appropriate clothing for work in hot weather.

Clothing for work in hot weather

- Layer clothing so you can be warm in the early morning and then keep cool later in the day. Make sure all layers are long-sleeved to protect skin from the sun.
- Do not wear layers that are too loose because clothing can get caught on branches or in machinery.
- Check the forecast so you can wear the appropriate clothing to keep you comfortable and protected.
- Wide brimmed hats are better than hoods or ball caps.
- Lightweight, light colored shirts are better than hooded sweatshirts.
- Wear all light colors, even pants.
- Use sunscreen! Frequent laundering of clothing with UV absorbent agents increases protection.

Activity

Have participants pair up and talk about their own clothing. They can point out to each other clothing that is good for hot weather or what they would change if it is going to be a very hot day. Pair up women with other women and men with other men.

Take-home messages

Light colored, lightweight, breathable long pants and shirts keep you cooler than dark, heavy, cotton clothes and protect against scratches, dust, and sun damage.

Remove layers as it gets hotter. Remove PPE during rest breaks to keep your body from overheating.

Clothing for work in hot weather

Wear light colored, lightweight clothing and a hat when working in the heat.







Staying hydrated at work

Group discussion questions

- How much water do you need to drink to stay hydrated?
- What types of actions or activities can lead to dehydration?

Sample question and response

FACILITATOR: *"Do you drink water when you are thirsty at work? Why or why not?"*

PARTICIPANT: *"I don't drink much water because I don't want to take the time to walk to the porta-potty. It is far and dirty."*

FACILITATOR: *"Yes, the toilets can be located a few minutes walk from where people are working in the field and they are not always as clean as we want them to be. However, taking the few minutes to walk to the bathroom is worth it if you are staying hydrated. If you get heat illness because you are dehydrated, then you will miss more time from work and lose more money."*

NOTES FOR THE FACILITATOR

Bring in cones and bottles so workers can see the sizes of 4-ounce cones and 8-ounce bottles.

Display poster and review recommendations for staying hydrated at work.

Staying hydrated at work

- Let workers know that employers are responsible for providing safe drinking water for employees. They are also responsible for giving workers the opportunity to drink at least 1 quart (or 1 liter) of water every hour.
- Drink small sips of water throughout the day.
- Don't compare yourself to other workers. Some people may need to drink more than 1 quart in an hour if it is very hot outside.
- Drinking energy drinks and sugary drinks like juice are not good for hydration. Drinking these beverages in moderation is okay, like drinking a small cup of coffee in the morning, but it is important to drink water.
- Eating a healthy snack and drinking water during breaks can help your body stay hydrated.

Activity

Have participants pair up and quiz each other on how many bottles of water they should drink on hot days. If they bring their own bottles or jugs to work, have them estimate how much liquid their containers hold so they know how much they need to drink.

Take-home messages

- Drink water before you are thirsty. When you are thirsty, you are already dehydrated!
- Remember "½ liter of water every ½ hour" on hot days (½ liter is about the same as two 8-ounce bottles.)

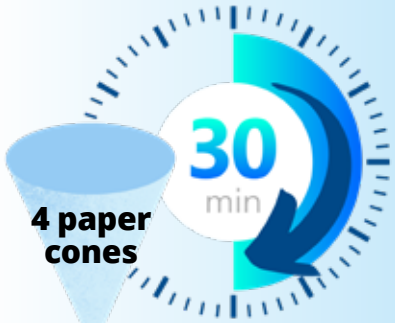
NOTES FOR THE FACILITATOR

Print out urine color posters for workers to take home so they can see how hydrated they are before and after work. An example of a urine color poster is at the end of this guide.

Staying hydrated at work

If you are thirsty, you are already dehydrated. Sip water throughout the day when it is hot to make sure you drink enough water.

Every 1/2 hour, drink 1/2 liter of water



Urine Color

Personal protective equipment (PPE) and heat

Group discussion questions

- What types of PPE do you usually wear?
- Have you or a coworker ever felt sick when applying pesticides? What were your symptoms? What did you do?

Sample question and response

FACILITATOR: *"Do you take PPE off during your breaks? Why or why not?"*

PARTICIPANT: *"I don't take my PPE off. It is hard to take off and put back on again, especially because it is wet with pesticide spray on the outside and I don't want to contaminate my clothing or skin."*

FACILITATOR: *"Taking PPE off during a break can be difficult if you don't have a long break or chance to change into different PPE. If your PPE is breathable, then you could unbutton or unzip the top part to cool off during a break. If you are wearing nonbreathable PPE, it is very important to take it off during breaks so you don't overheat. Bring a clean set of PPE with you to change into if you can."*

NOTES FOR THE FACILITATOR

Different types of PPE are required depending on the work task and pesticides that are being used. For pesticide applicators, the directions on the pesticide label should always be followed. Work coveralls are not considered PPE. Different jobs that require work coveralls or PPE are jobs as mechanics or in the shop, irrigation crew, and pesticide applicators.

Display poster and review education on PPE and heat.

PPE and heat

Regular work clothes is the coolest option and recommended for most field workers.

Polypropylene or polyolefin coveralls are the coolest PPE options and are recommended when permitted by the pesticide label.

Work coveralls over regular clothing may be necessary for some jobs. These are not considered PPE. In some cases a lighter weight polyolefin suit may be used instead of work coveralls. If coveralls are being worn in direct sun, a lighter color is recommended.

Vapor barrier suits are required for certain pesticides. This type of PPE can heat your body up the most and is used for protection from the most toxic chemicals. Applicators should be aware of how they are feeling because there is increased risk of heat illness and exposure to some of the more toxic pesticides.

Respirators can create discomfort in the heat. It is also important to consider the differences between half-face, full-face, and other respirator types when planning for work in the heat.

Activity

Have workers pair up and share ideas for how they stay cool when wearing PPE. After a couple minutes, ask each person to give one example of what they do to stay cool. They may use a cooling vest under their PPE or have other ideas.

Take-home messages

Always follow the pesticide label when selecting PPE. If the label allows for polypropylene or polyolefin suits, these are recommended as the cooler option.

Signs and symptoms of heat illness may be harder to detect when you are wearing PPE, and it can be hard to tell the difference between pesticide poisoning and heat-related illness. If you think you or a co-worker are getting sick from heat or pesticides, get medical attention right away. Do not spend time trying to figure out if symptoms are from heat or pesticides.

Personal protective equipment (PPE) and heat

PPE and work coveralls can be much hotter than regular work clothes and can cause more heat stress. Remove PPE during breaks to cool off!

Regular work clothes without PPE

HEAT LEVEL

Work coveralls over regular work clothes

HEAT LEVEL

Polypropylene or polyolefin coveralls

HEAT LEVEL

Vapor barrier non-breathable PPE

HEAT LEVEL

Keeping cool in the home and community

Group discussion questions

- Where are the coolest areas inside where you live?
- Where are your favorite places to go in the summer to stay cool?

Sample question and response

FACILITATOR: *"How do you keep your house cool in the summer?"*

PARTICIPANT: *"We use fans. We would like to open our windows when it is cool but we do not feel like it is safe to leave our windows open."*

FACILITATOR: *"Staying cool during heat waves is not easy. Sometimes opening windows is not an option if it does not feel safe, there are pesticides being sprayed nearby, or there is a lot of wildfire smoke in the air. During these times, the best options are to close the curtains or blinds to prevent sun from shining in the home during the day, try to not cook with heat inside the home, and find other places to cool off, like the library."*

Display poster and review ways to keep cool in the home and community.

Activity

Have participants pair up and share their own ideas for places to go and what to do to stay cool when they are not working. After a couple minutes, ask each person to give one example of what they do to keep cool in the home or community.

Keeping cool in the home and community

Inside the home:

- Use fans to move air around in home. Put a bowl of ice in front of a fan to help cool the air.
- Open windows in the early morning and evening.
- Close windows and curtains during the day to keep cool air inside, especially on the sides of the house that get the most sun.
- Use curtains that are white on the side facing the window to help heat from coming into the home.
- Use a fan to pull cool air inside during morning and blow warm air out during evening.
- Hang a damp sheet in an open window when the air outside is dry and cooler than the air inside. Breezes coming into the home are cooled by the evaporating water from the sheet.
- Air dry dishes instead of using a dishwasher.
- Hang clothes outside to dry instead of using an electric dryer.
- Cook outside when possible.

Outside the home:

- Find or make shade in the yard. Making shade does not have to be expensive. A simple sunshade can be made with a tarp and PVC pipe.
- Use a grill or outside stove for cooking.
- Fill a kiddie pool or use a sprinkler to keep kids cool. Supervise kids using the pool.
- Find places to go where there is shade, water, or air conditioning.

Cool yourself:

- Take a quick, cold shower
- Keep a spray bottle with water in the refrigerator and spray yourself when you are hot.
- Fill a plastic bottle with water and put it in the freezer the day before going out in the heat. The ice in the bottle will melt and water will stay cool longer.

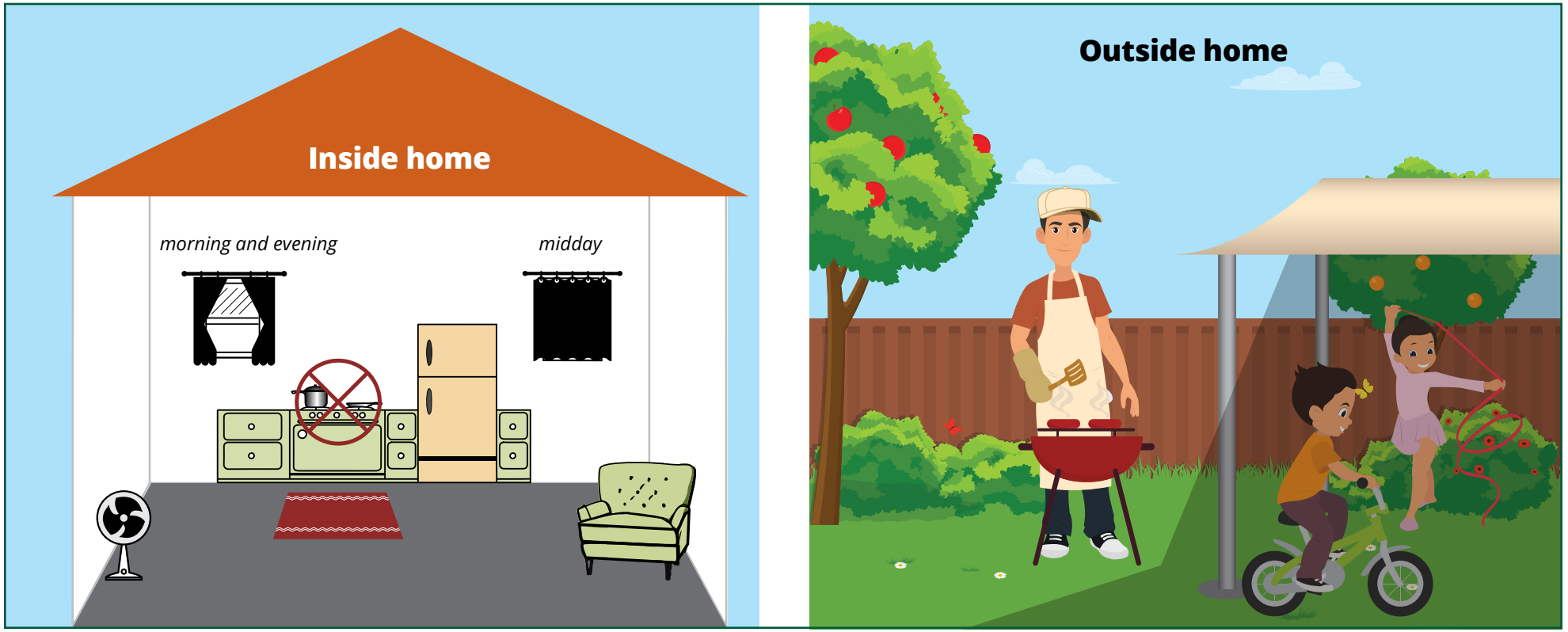
Take-home messages

There are actions you can take to make your home cooler during heat waves like using fans, opening and closing windows at certain times, not cooking inside when it is hot, and closing blinds and curtains so the sun does not shine in the home.

There are places you can go for free to cool off like parks, libraries, malls, and community centers when it is not possible to stay cool in your home.

Keeping cool in the home and community

Keep your family cool during hot weather.



Go to these places in the community to cool off

Parks | Lakes or swimming pools | Community centers | Malls | Libraries

Acclimatization

Group discussion questions

- How do you adjust to working in the heat?
- What are some of the ways you keep an eye out on each other?

Sample question and response

FACILITATOR: *When the temperatures start getting higher, do you do anything to adjust to working in the heat?*

PARTICIPANT: *Earlier this season when it started getting hotter, my work schedule and tasks changed. I was working earlier in the morning during the cooler hours of the day. I also took more frequent breaks in the shade and drank water.*

FACILITATOR: *It's important to give your body time to adjust to working in the heat. Adjusting your work activities is a great strategy. In addition, avoiding heavy work tasks during the hottest parts of the day can help prevent heat illness. It's great that you stayed hydrated and took shaded breaks as you needed.*

What is acclimatization?

Acclimatization is the slow adaptation of the body to working in the heat that occurs over time when the body is exposed to working in the heat a little bit every day. It is important to slowly get your body used to working in the heat before working long hours to avoid heat illness. This process can also help you stay productive at work.

It usually takes a person about one to two weeks (or 7-to-14-days) to get used to working in the heat. Each person may be different in how long they take to acclimatize to the heat based on their experience and personal factors.

You may not be acclimatized if you:

- Are a new worker.
- Have not worked in the heat for a week.
- Are working on days with sudden temperature increase.

NOTES FOR THE FACILITATOR

Workers will need to acclimatize and should not work alone or without communication or observation by a supervisor or coworker. Remind workers they all may still need to adjust to working in the heat again every season, even if they are experienced or

Acclimatization Schedule

An acclimatization schedule provides a plan to gradually increase the number of hours worked in the heat each day. It is recommended that workers increase their heat exposure by about 20% (about 2 hours) each day, and work time in the heat during acclimatization be performed within the same period rather than being split up across a workday.

During this acclimatization work time, a worker should perform the main task they will be performing while working in hot environments. Lighter tasks or other tasks in cooler environments could be performed for the rest of the work day.

Acclimatization is lost after a week away from working in the heat.

Note: These are general guidelines. Each person may vary in how long they take to acclimatize to the heat based on their work experience and personal factors.

Display poster and review best practices for supporting workers adjusting to working in the heat.

Best practices for supporting workers adjusting to working in the heat

Here are some recommendations for workers and employers to help minimize the risk of heat illness for workers who are not fully acclimatized.

- Slowly increase the number of hours working in the heat each day and modify work tasks such as lighter tasks or tasks in cooler environments on hot days.
- Schedule work during cooler hours of the day.
- Adjust work activities to avoid heavy work tasks during the hottest parts of the day.
- If you are not fully acclimatized, you should not work alone and should work with a buddy.
- Workers and supervisors should receive training on how to recognize and respond to heat illnesses.
- Keep an eye out for signs of heat illness, and let your supervisor know if you or others are feeling sick.

- Take shaded breaks and drink water often.
- Encourage each other to ask for more breaks or changes to work activities such as lighter tasks or tasks in cooler environments when needed.
- Remove Personal Protective Equipment (PPE) during your breaks to cool off.
- Make sure you can reach someone if needed by phone, radio, or in-person.

EMPLOYERS SHOULD

- Be prepared to adjust work for new workers or workers who are not acclimatized to the heat.
- Provide training to workers and supervisors on how to recognize and respond to heat illness.
- Schedule and provide additional shaded breaks with cool water.
- Provide a 'cooling station', a location for workers to rest and cool down during breaks.
- Develop a plan to monitor and communicate with workers who are working alone, for example:
  - ◊ Check-in and communicate with workers regularly.
  - ◊ Set up a system to account for workers (e.g., keep a log of workers on your work crews, including their names, supervisors, work locations, and hours worked on a given day, etc.).

Consider sharing the poster on acclimatization and schedules, page 26.

Activity: Buddy System

Have participants pair up to discuss strategies for how they can look out for each other to make sure they are staying safe while working in the heat. After they've had the opportunity to discuss as a pair, ask for volunteers to share 1 or 2 strategies out loud with others.

Group recommendations:

- Check-in on and ask about how you are feeling with each other throughout the day.
- Encourage each other to take breaks in the shade and stay hydrated.
- Encourage each other to ask for more breaks or changes to work activities when needed.
- If you notice you or another worker is showing redness in the face, heavy sweating, cramping in arms, legs, belly, these are signs you need rest, water, and shade.
- Keep an eye out for signs of heat illness and report any symptoms you experience or observe in others to a supervisor. Make sure you can reach someone if you need to by phone, radio, or in-person.
- If you notice you or another worker is acting confused, has hot dry skin, or is unresponsive, this is a medical emergency. Call 911.
- Call 911 if you suspect a medical emergency. When you call 911 say in English "heat stroke". Be ready to provide 911 with directions to your location.

NOTES FOR FACILITATOR

It is important that workers are able to recognize and respond to heat illness. Consider sharing the Symptoms and treatments for heat illness poster, page 6.

Take Home messages

Workers who are new, returning to working in the heat, or working on days that have suddenly become very hot, may not be acclimatized and are at greater risk for developing heat illness. Remember to give yourself time to adjust to working in the heat.

Adjusting to the heat (Acclimatization)

Acclimatization is the body's slow adjustment to working in the heat that occurs as a person is exposed to hot conditions over time.

Your job requires you to work in high temperatures...

You will need to acclimatize if you:

- Are a new worker
- Have not worked in the heat for a week
- Are working on days with sudden temperature increase

Be prepared to adjust work for workers who are not acclimatized to working in the heat.

Work Week	Day 1	Day 2	Day 3	Day 4	Day 5
New Work in the Heat Add 2 hours each day	2 hrs	4 hrs	6 hrs	8 hrs	10 hrs

Note: This example is based on a 10 hour workday. For an 8 hour workday, it would be about 1.5 hour increase per day.

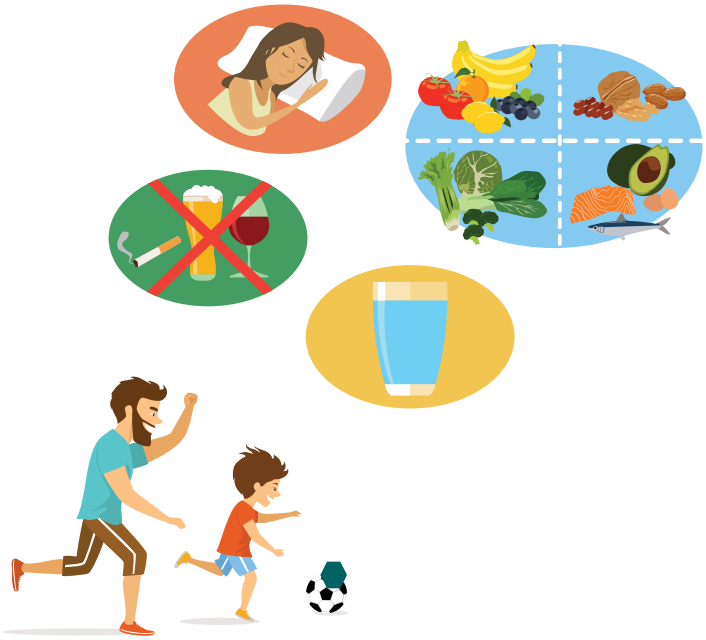
Remember to give yourself and others time to adjust to working in the heat.

- ***Schedule work during cooler hours of the day.***
- ***Look out for signs of heat illness and take shaded water breaks often.***
- **During hottest parts of the day, modify work to lighter tasks or other tasks in cooler environments.**

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



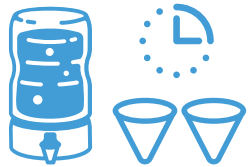
Awareness

- [ ] 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

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

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
https://lawfilesext.leg.wa.gov/law/wsr/2008/13/08-12-109.htm

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 Francais 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/-

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, be he suffers from permanent damage to muscles in his legs and shoulders.

SOURCE: Bangor Daily News Online, October 27, 2017
https://www.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
https://bakersfieldnow.com/news/local/cal-osha-investigating-farmworker-death

2021 – Washington

On July 29, an experienced hop worker was pronounced dead at the scene in the late afternoon by emergency-medical personnel. The worker was over 65 years of age. Farm personnel noticed he had not returned to the parking lot after his shift. He was found unresponsive next to his tractor. 911 was called and CPR was performed. Medical personnel were unable to revive him. The county medical examiner attributed his death to heart disease with environmental heat as a contributing factor. The average hourly temperature reported that afternoon was 100.8 degrees Fahrenheit.

SOURCE: The Seattle Times Online, August 4, 2021
https://www.seattletimes.com/business/agriculture/heat-was-contributing-factor-in-july-death-of-yakima-valley-farmworker/

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.*

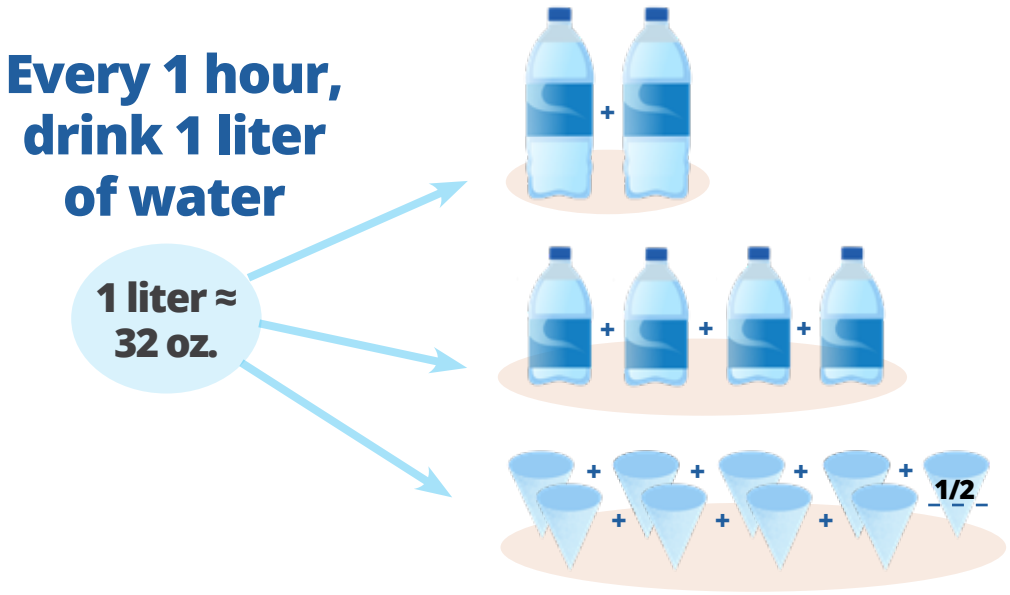
FOLLOW-UP QUESTIONS:

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?

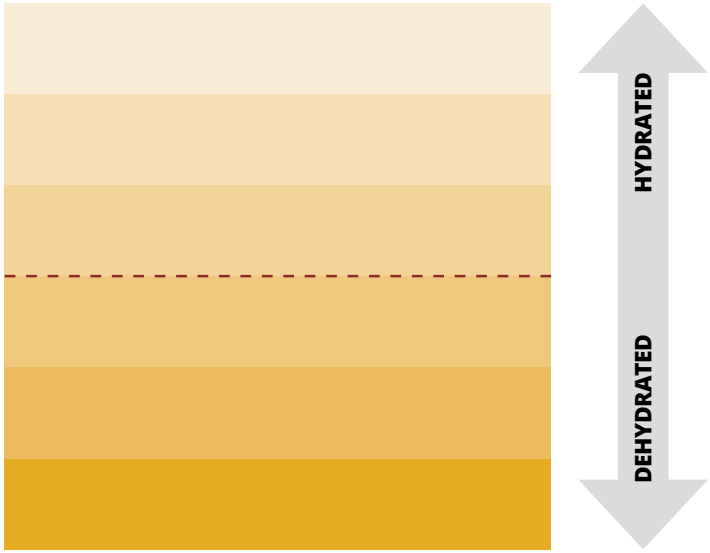
Hydration and urine color

Hydration: 1 liter of water every 1 hour



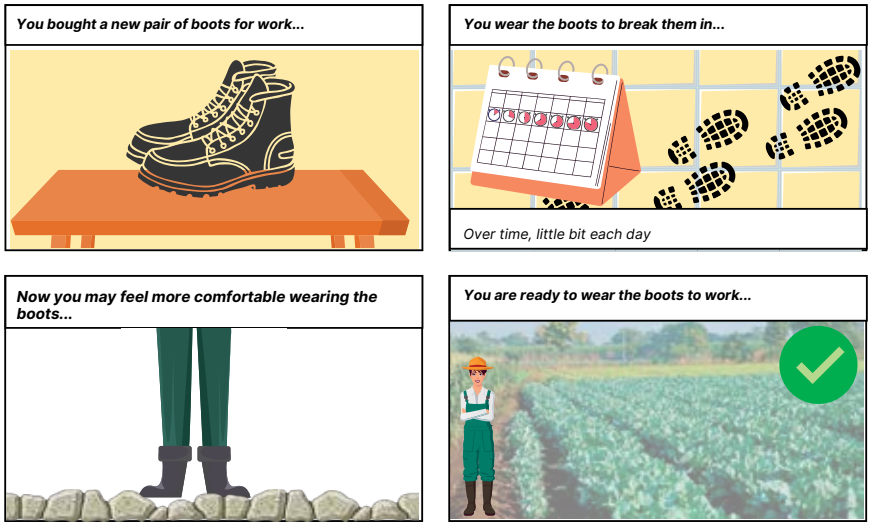
Urine color chart and hydration

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



Acclimatization and schedules

Breaking in new work boots



Training for a Marathon

Acclimatization Schedule: Provides a plan for workers to gradually increase the number of hours worked in the heat each day.

Example for New Workers

Work Week	Day 1	Day 2	Day 3	Day 4	Day 5
New Work in the Heat Add 2 hours each day.	2 hrs	4 hrs	6 hrs	8 hrs	10 hrs

Example for Experienced Workers

Work Week	Day 1	Day 2	Day 3	Day 4
New Work in the Heat Add about 2 hours each day.	5 hrs	6 hrs	8 hrs	10 hrs

Note: These examples are based on a 10-hour workday. For an 8-hour workday, it would be about 1.5 hour increase per day.

How do you prevent heat illness in agriculture?

Tips and strategies to reduce heat illness for outdoor agricultural workers. This resource is part of the Heat Education and Awareness Tools (HEAT) with training guides, posters, and more, visit: https://deohs.washington.edu/pnash/heat-toolkit.

Disclaimer: This resource provides practical tips & guidance to prevent heat illness. For the outdoor heat requirements in Washington, see to WAC 296-307-097 and in Oregon, see OAR 437-002-0156.

Download free Heat Toolkit!

Best Practices for Employers

- ✓ Know the forecast
- ✓ Easy access to water & restroom
- ✓ Provide shaded rest breaks
- ✓ Track your state's workplace requirements
- ✓ Monitor & know when to call 911

Best Practices for Workers

- ✓ Come to work hydrated
- ✓ Wear light clothing & hat
- ✓ Know personal health risks

- ✓ Take shaded breaks to cool down
- ✓ Report heat illness & safety concerns

Create an Accident Prevention Plan

- Develop heat safety plan & share it with workers & supervisors.
- Make sure you understand the heat safety plan & know where to find it.

Provide Heat Safety Training

- Provide annual training to workers & supervisors before the heat season & during hot days.
- You should receive training on how to adjust to the heat, rest breaks, & heat safety procedures during hot days.

Develop Communication & Monitoring Practices

Observe workers & communicate with them regularly.

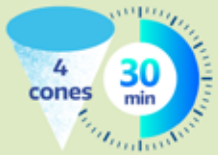
- Know who is working & their location.
- Ensure workers & supervisors can communicate easily.
- Check-in on workers who are working alone.
- Use a buddy system for workers to look out for one another.

Make sure you can reach someone if you need to by phone, radio or in-person.

Provide Cool & Fresh Water

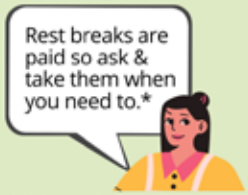
- Supply plenty of cool water near workers & restock it frequently.
- Don't wait until you are thirsty! Take small sips of water throughout the day.

1/2 liter every 1/2 hour



Provide Paid Rest Breaks & Shade

- Allow & encourage workers to take rest breaks & provide areas with shade or A/C.
- Breaks will reduce the heat your body creates while working in the heat.



*Rest breaks are paid in WA & OR. Check with the requirements in your state.

Develop High Heat Procedures

When temperatures reach 90°F or higher:

- Schedule additional shaded breaks with cool water.
- Encourage workers to keep a closer eye on one another.
- Communicate regularly with workers who are working alone.

Monitor yourself & others for signs of heat illness.

- ✓ Redness
- ✓ Heavy sweating
- ✓ Moving slowly

PACIFIC NORTHWEST AGRICULTURAL SAFETY & HEALTH CENTER

SCHOOL OF PUBLIC HEALTH
UNIVERSITY of WASHINGTON

How do you prevent heat illness in agriculture?

Tips and strategies to reduce heat illness for outdoor agricultural workers. This resource is part of the Heat Education and Awareness Tools (HEAT) with training guides, posters, and more, visit: https://deohs.washington.edu/pnash/heat-toolkit.

Disclaimer: This resource provides practical tips & guidance to prevent heat illness. For the outdoor heat requirements in Washington, see to WAC 296-307-097 and in Oregon, see OAR 437-002-0156.

Download free Heat Toolkit!

Allow Workers to Adjust to the Heat

Acclimatization is the body's slow adjustment to working in heat that occurs as a person is exposed to hot conditions over time.

Who needs to adjust to the heat? Workers who are new, returning to working in the heat or working on days that have suddenly become very hot may not be acclimatized.

How does a worker adjust to the heat? It is recommended workers increase their heat exposure by about 20% (about 2 hours) each day.

Slowly increase # of hours working in the heat each day & modify work tasks on hot days.

- Check-in & communicate with workers regularly.
- Schedule work during cooler hours of the day.
- Adjust work to avoid heavy work tasks during the hottest parts of the day.
- Be prepared to adjust work for new workers or workers who are not adjusted to the heat.

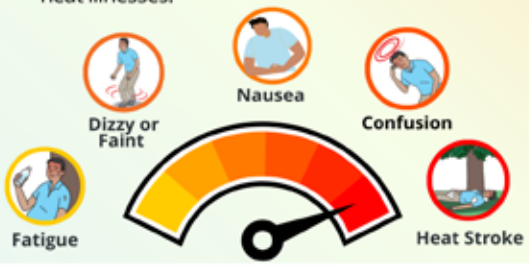
Keep an eye out for signs of heat illness & take shaded breaks to drink water often.

- Tell your supervisor if you or others are feeling sick.
- Encourage each other to ask for more breaks or changes to work when needed.

Identify & Treat Heat Illness

Signs & Symptoms

Train workers & supervisors how to recognize & respond to heat illnesses.



Treatments

Heat illnesses can be mild or severe. Symptoms can occur quickly & happen in any order. Know the symptoms & treatments, and tell a supervisor if you or others experience symptoms.

Practice Emergency Response Procedures

Train employees to respond immediately & call 911 if they suspect heat stroke. Schedule a drill to allow employees to walk through the emergency procedures.

When you call 911, make sure you know how to give instructions to help the ambulance reach your location.

Outdoor Heat Rules

Washington, WAC 296-307-097
WA Dept. Labor & Industries

Oregon, OAR 437-002-0156
OR OSHA

Training Resources

WA Dept. Labor & Industries
Be Heat Smart webpage:
https://www.lni.wa.gov/safety-health/safety-training-materials/workshops-events/beheatsmart

Oregon OSHA
Heat Stress resources:
https://osha.oregon.gov/Pages/topics/heat-stress.aspx

PNASH Center
Heat Toolkit:
https://deohs.washington.edu/pnash/heat-toolkit

Frequently Asked Questions

For Washington Workers

Who can I call to get guidance on developing a heat safety APP? WA Dept. Labor & Industries, Consultation | https://lni.wa.gov/safety-health/preventing-injuries-illnesses/request-consultation/

Where can I report unsafe working conditions? WA Dept. Labor & Industries | 1-800-423-7233, Press 2 & then 2

Where do I call to report a workplace injury or illness? WA Dept. Labor & Industries | 1-800-547-8367, Press 2

Where do I call for information on paid family and medical leave? Employment Security Division | 1-833-717-2273

How can I learn more about benefits or programs for workers? Northwest Justice Project | Call or text: 509-225-0026

What do I do if I get sick and they fire me or stop paying me? WA Dept. Labor & Industries | (509)-735-0111 or (425)-258-6372

PACIFIC NORTHWEST AGRICULTURAL SAFETY & HEALTH CENTER

SCHOOL OF PUBLIC HEALTH
UNIVERSITY of WASHINGTON

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

- **Oregon OSHA**
  https://osha.oregon.gov/Pages/topics/heat-stress.aspx
- **Washington State Department of Labor and Industries**
  www.Lni.wa.gov/HeatSmart
- **CDC**, Heat Stress
  https://www.cdc.gov/niosh/topics/heatstress/
- **OSHA**, Heat Illness Prevention
  https://www.osha.gov/heat
- **PNASH Center**, Heat Illness Prevention
  https://deohs.washington.edu/pnash/heat_illness
- **WCAHS Center**, Heat Illness Prevention
  https://aghealth.ucdavis.edu/es/training/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.

Acknowledgments:

We would like to thank the following groups for their contributions to the content of this guide:

The project advisory group and expert working group members, UW PNASH outreach and administrative staff and students, Quincy Community Health Center, WA State Department of Labor and Industries, El Proyecto Bienestar, Northwest Communities' Education Center/ Radio KDNA

Photographs courtesy of Sarah Fish, Jen Krenz.

Illustrations courtesy of Stacey Holland.