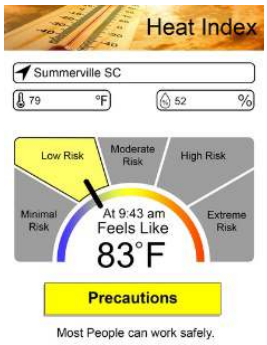
HBACA Safety Committee
Tool Box Talk #4
Heat Illness Resources

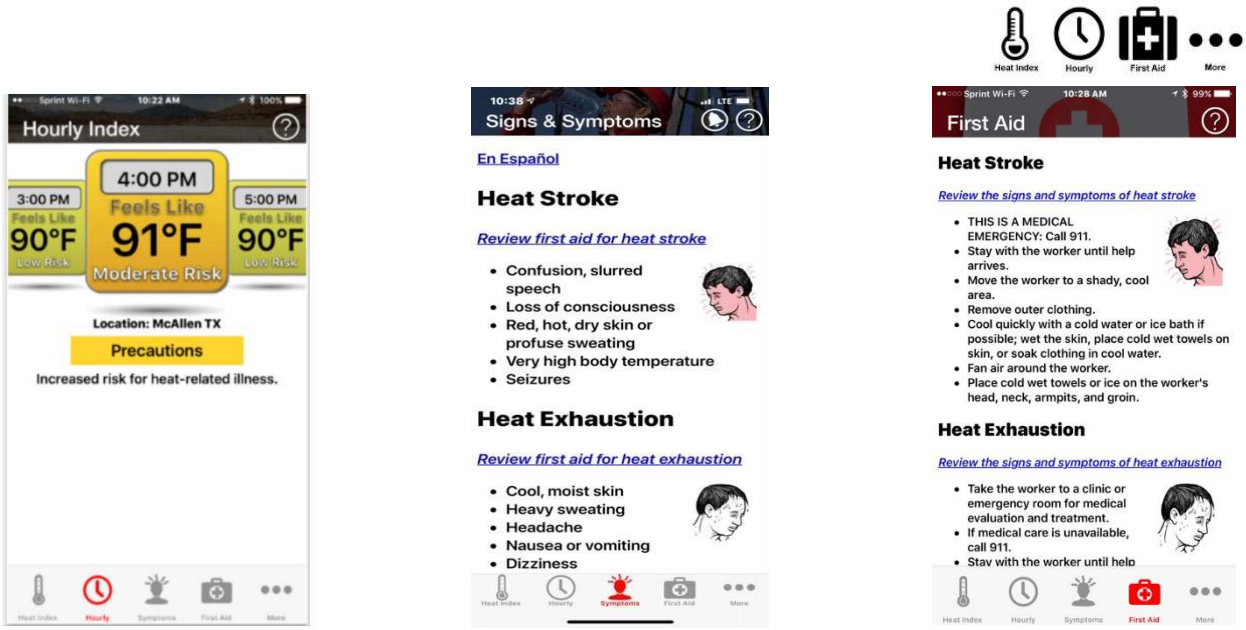
HEAT INDEX APP

- The Heat Index is a measure of how hot it really feels when relative humidity is factored in with the actual air temperature.

- OSHA has created a Heat Index app available for use with an Android or Apple device.



  - Provides a visual indicator of the current heat index and associated risk levels specific to your current location.
  - Provides precautionary recommendations specific to heat index associated risk levels.
  - Displays an interactive, hourly forecast of heat index values, risk level, and recommendation for planning outdoor work activities in advance.



Additional Resource Links

Heat Index App Installer: OSHA-NIOSH Heat Safety Tool App | NIOSH | CDC

Heat Illness Prevention Campaign: OSHA Heat Illness Prevention Campaign - YouTube

Heat Illness Prevention Campaign (Spanish): Campaña de OSHA para prevenir las enfermedades a causa del calor en trabajadores - YouTube

OSHA Heat Illness Prevention (Outdoor Workers) Publications:
https://www.osha.gov/publications/bytopic/heat-illness-prevention-(outdoor-workers)

CDC Hydration Info Sheet: https://www.cdc.gov/niosh/mining/UserFiles/works/pdfs/2017-126.pdf

Tips for preventing Heat related illness: Tips for Preventing Heat-Related Illness | Natural Disasters and Severe Weather | CDC

U.S National Library of Medicine (Medline Plus): https://medlineplus.gov/heatillness.html

University Of Washington (Heat Illness Toolkit):
https://deohs.washington.edu/pnash/heat-toolkit

OSHA® QUICK CARD™

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.

U.S. Department of Labor

For more information:

OSHA® Occupational Safety and Health Administration

www.osha.gov (800) 321-OSHA (6742)

OSHA 3154-06R 2014

OSHA® QUICK CARD™

- Modify work schedules and arrange frequent rest periods with water breaks in shaded or air-conditioned areas.
- Gradually increase workloads and allow more frequent breaks for workers new to the heat or those that have been away from work to adapt to working in the heat (acclimatization).
- Routinely check workers who are at risk of heat stress due to protective clothing and high temperature.
- Consider protective clothing that provides cooling.

How You Can Protect Yourself and Others

- Know signs/symptoms of heat illnesses; monitor yourself; use a buddy system.
- Block out direct sun and other heat sources.
- Drink plenty of fluids. Drink often and BEFORE you are thirsty. Drink water every 15 minutes.

- Avoid beverages containing alcohol or caffeine.
- Wear lightweight, light colored, loose-fitting clothes.

What to Do When a Worker is Ill from the Heat

- Call a supervisor for help. If the supervisor is not available, call 911.
- Have someone stay with the worker until help arrives.
- Move the worker to a cooler/shaded area.
- Remove outer clothing.
- Fan and mist the worker with water; apply ice (ice bags or ice towels).
- Provide cool drinking water, if able to drink.

IF THE WORKER IS NOT ALERT or seems confused, this may be a heat stroke. CALL 911 IMMEDIATELY and apply ice as soon as possible.

If you have any questions or concerns, call OSHA at 1-800-321-OSHA (6742).

U.S. Department of Labor

For more information:

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HEAT STRESS
Work/Rest Schedules

Using work/rest schedules can decrease the risk of heat illness

Sample Work/Rest Schedule for Workers Wearing Normal Clothing*

The NIOSH work/rest schedule is based on air temperature, with adjustments for direct sunlight and humidity. It may not be applicable to all worksites. Other work/rest schedules are available, some of which are based on Wet Bulb Globe Temperature.

See reverse for temperature adjustments for the NIOSH work/rest schedule and examples of light, moderate, and heavy work.

Temperature (°F)	Light Work Minutes Work/Rest	Moderate Work Minutes Work/Rest	Heavy Work Minutes Work/Rest
90	Normal	Normal	Normal
91	Normal	Normal	Normal
92	Normal	Normal	Normal
93	Normal	Normal	Normal
94	Normal	Normal	Normal
95	Normal	Normal	45/15
96	Normal	Normal	45/15
97	Normal	Normal	40/20
98	Normal	Normal	35/25
99	Normal	Normal	35/25
100	Normal	45/15	30/30
101	Normal	40/20	30/30
102	Normal	35/25	25/35
103	Normal	30/30	20/40
104	**Normal**	**30/30**	**20/40**
105	Normal	25/35	15/45
106	45/15	20/40	**Caution**
107	40/20	15/45	**Caution**
108	**35/25**	**Caution**	**Caution**
109	30/30	**Caution**	**Caution**
110	15/45	**Caution**	**Caution**
111	**Caution**	**Caution**	**Caution**
112	**Caution**	**Caution**	**Caution**

Things you need to know:

- Continuous work in the heat is not advisable—you must take rest breaks periodically to allow your body to cool down.
- A variety of work/rest schedules are available that can be adapted to your worksite. Relying on self-pacing alone may not be sufficient.

Example

A worker performing heavy work in 104 °F temperatures should work for 20 minutes and rest for 40 minutes.

Example

A worker performing moderate work at 108 °F should use extreme caution! The risk for heat injury is high in this situation.

* From NIOSH Criteria for a Recommended Standard, Occupational Exposure to Heat and Hot Environments, https://www.cdc.gov/niosh/docs/2016-106/pdfs/2016-106.pdf. **Assumptions:** workers are physically fit, well-rested, fully hydrated, under age 40, and environment has 30% humidity and perceptible air movement.

HEAT STRESS Work/Rest Schedules

Temperature Adjustments for this Work/Rest Schedule

Adjust the temperature in the table based on:

Environmental conditions	AND	Humidity
• Full sun (no clouds): Add 13 °F • Partly cloudy/overcast: Add 7 °F • No shadows visible, in the shade, or at night: No adjustment		• 40% humidity: Add 3 °F • 50% humidity: Add 6 °F • 60% humidity or more: Add 9 °F

Example Adjustment

Conditions at a mine are 90 °F, with partly cloudy skies and 50% humidity. Adjust the table as follows:

Add 7 °F for partly cloudy skies and 6 °F for 50% humidity, to arrive at 103 °F.

Photo by ©Thinkstock

Examples of Work at Different Intensity Levels

Light work

- Operating equipment
- Inspection work
- Walking on flat, level ground
- Using light hand tools (wrench, pliers, etc.). However, this may be moderate work depending on the task
- Travel by conveyance

Moderate work

- Jack-leg drilling
- Installing ground support
- Loading explosives
- Carrying equipment/supplies weighing 20–40 pounds
- Using hand tools (shovel, fin-hoe, scaling bar) for short periods

Heavy work

- Climbing
- Carrying equipment/supplies weighing 40 pounds or more
- Installing utilities
- Using hand tools (shovel, fin-hoe, scaling bar) for extended periods

Case Study: Use of Work/Rest Schedule

A crew was shoveling ore out from under the primary conveyor at a surface mine in Arizona in August. The high temperature that day was 113 °F. The crew was rotating in 10-minute shifts and hydrating between shifts. Coworkers noticed signs of heat illness in two employees, and they were transferred to the medical station for evaluation. From there they were sent to the hospital, where they were given IV saline and released home. Both employees recovered after rehydration at the hospital.

Lessons Learned

In extreme heat, even a work/rest schedule may not eliminate the risk of heat illness. In this case, use of work/rest schedules, frequent hydration, and team monitoring helped keep this situation from becoming even more serious. Without those safety precautions the workers could have potentially suffered more severe heat illness, possibly including heat stroke, which is life threatening.

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health

DHHS (NIOSH) Publication No. 2017-127

Remember, when it's hot:

Heed your body! watch for symptoms!

Ensure you're drinking enough!

Adjust your activity level– slow down!

Take clothing/PPE into account!

Heat Stress

If possible, stay out of the sun.

Know the signs and symptoms of Heat Stress.

- Dizziness
- Headache
- Weakness
- Rapid Heartbeat
- Nausea
- Cramps
- Chest Pain
- Labored Breathing

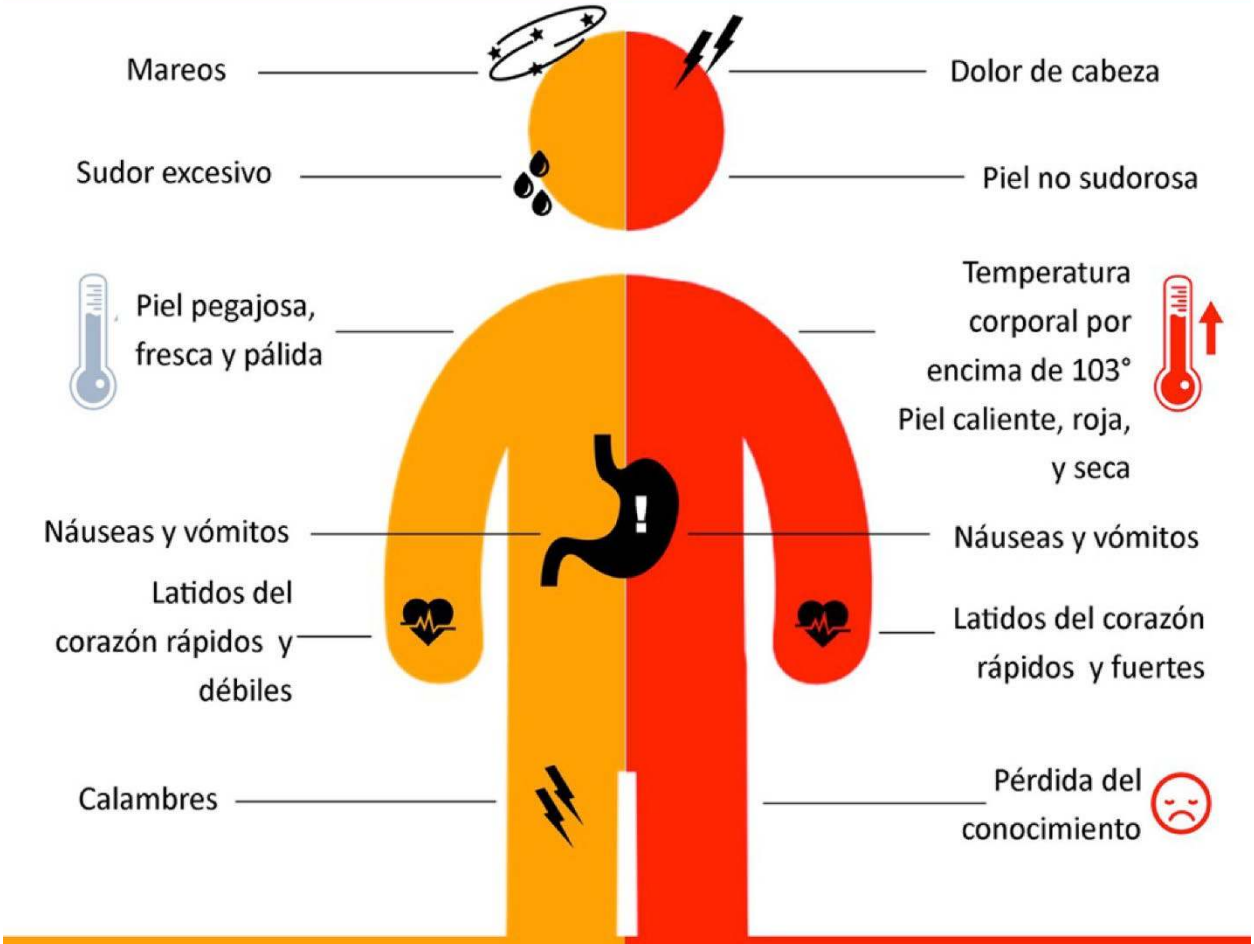
When the weather is hot, avoid caffeine

COOL DOWN, whenever possible

Wear loose, breathable clothing such as cotton. If you must work in the sun, wear hats and use sun screen.

Maintain proper hydration. Drink small amounts of water frequently. Avoid feeling thirsty.

AGOTAMIENTO DEBIDO AL CALOR o INSOLACIÓN



- Descanse en un lugar fresco y sombreado
- Tome mucha agua y otros líquidos
- Báñese con agua fría o utilice compresas frías

Llame al 9-1-1

- Tome acción inmediatamente para enfriar su temperatura corporal hasta que llegue la ayuda necesaria

PROTECT YOUR WORKERS FROM

HEAT STRESS

Develop an acclimatization plan

Acclimatization is the result of beneficial physiological adaptations (e.g., increased sweating efficiency and stabilization of the circulation) that occur after gradual increased exposure to a hot environment.

TIP 1

Gradually increase the time spent in hot environmental conditions over a 7–14 day period.

TIP 2

For new workers, the schedule should be no more than 20% exposure to heat on day 1 and an increase of no more than 20% exposure on each additional day.

TIP 3

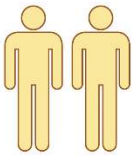
For workers who have had previous experience with the job, the acclimatization schedule should be no more than:

DAY 1	DAY 2	DAY 3	DAY 4
50% EXPOSURE	60% EXPOSURE	80% EXPOSURE	100% EXPOSURE

Set up a buddy system

Check your workers routinely to make sure...

- ☑ they make use of readily available water and shade.
- ☑ they don't have heat-related symptoms.

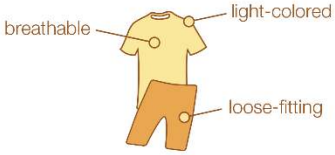


Schedule and encourage frequent rest breaks...

...with water breaks in shaded or air-conditioned recovery areas.

Emphasize the need for appropriate clothing

Encourage workers to wear clothing that is...



Cotton clothing can be soaked in water to aid cooling.

Be aware that protective clothing or **personal protective equipment** may increase the risk of heat stress.

Encourage workers to drink plenty of fluids...

...such as drinking small amounts of water before becoming thirsty.

During moderate activity in moderately hot conditions, workers should drink about...

1 cup every 15 to 20 minutes.

Learn more about heat stress at: **www.cdc.gov/niosh/topics/heatstress**

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