

Ag Health 101

# HEAT ILLNESS

## PREVENTION

### UNIT 2



# CHAPTER DISCUSSION QUESTIONS

## CHAPTER 1: HOW WE REGULATE HEAT



Describe how you feel when first working outdoors during a hot summer. Reflect on how active you are (or aren't) and how you accommodate activity to hot and/or humid weather. Did you notice it was less of an issue later in the summer?

## CHAPTER 2: TYPES OF HEAT ILLNESS



How would you coach a worker about their risk of developing heat illness?

## CHAPTER 3: PREVENTION (MONITORING & PREPARATION)



Identify a few heat stress/safety smartphone apps and test them. Identify one or two that you think would work in communities you serve and that give you/workers specific heat protection guidance. Discuss what you like about it and what maybe you wish it also had.

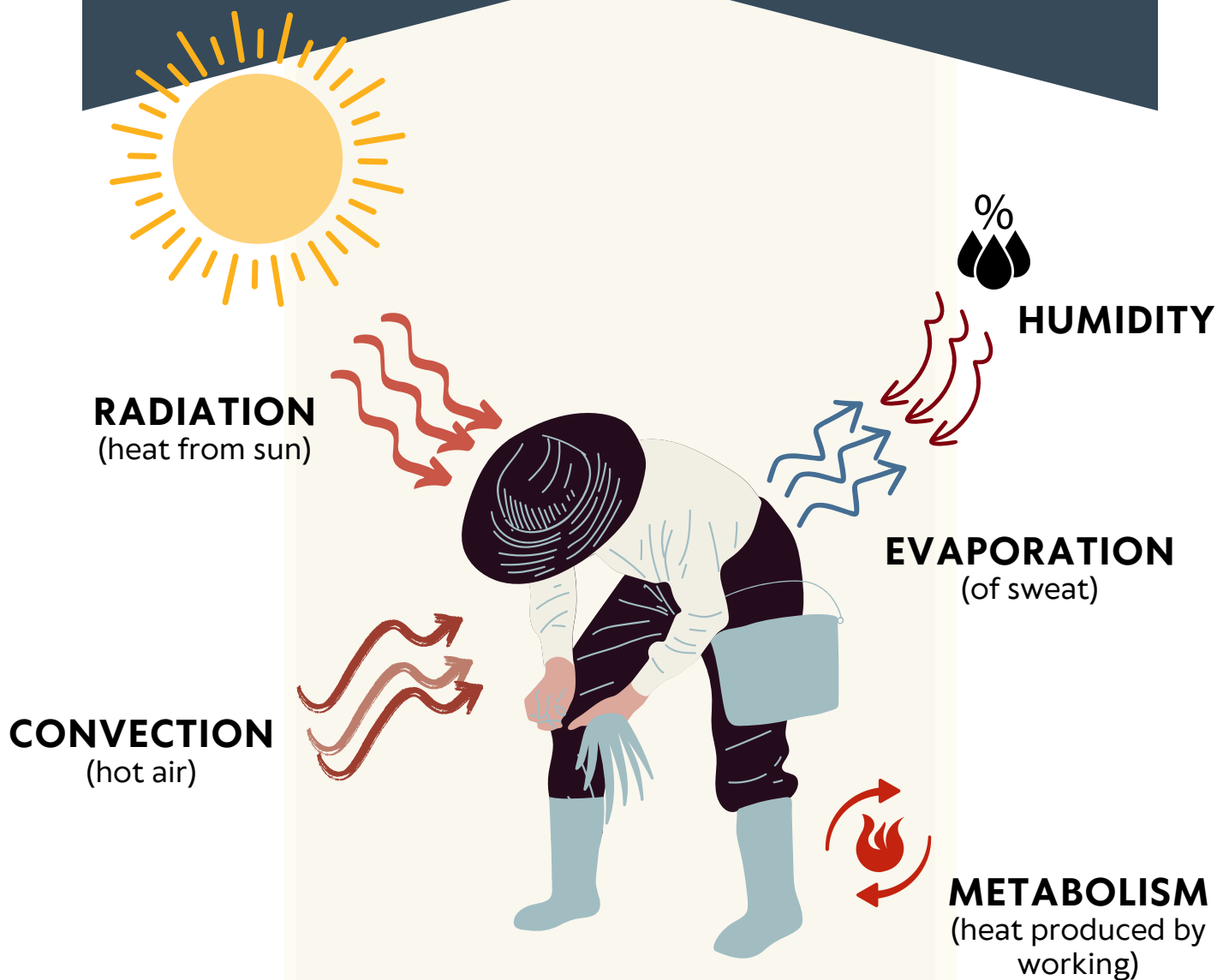
## CHAPTER 4: HYDRATION



We ask that you take a look at your urine and see where you are on the color charts we are providing to you. What is a good plan to recommend you do this? What would a morning check tell you compared to an after work check?

# CHAPTER 1

## HOW WE REGULATE HEAT



The human body has a feedback mechanism to control mechanisms to keep our core body temperature within its normal operating range (98.6 °F +/-).

# CHAPTER 2

# TYPES OF HEAT ILLNESS

## HEAT RASH

Tiny red blisters on affected area

Heavy sweating

### FIRST AID

- Cool skin in affected area(s)
- Avoid heat that caused rash

## HEAT CRAMPS

Heavy sweating

Thirst

Fatigue

Painful muscle cramps or spasms

### FIRST AID

- Move to shade or air conditioning
- Drink fluids with electrolytes (like juice or sports drinks)
- Rest

## HEAT EXHAUSTION

Faint or dizzy, headache

Excessive sweating

Weak or rapid pulse

Nausea & vomiting

Weakness, muscle cramps or spasms

### FIRST AID

- Move to shade or air conditioning
- Remove or loosen clothing
- Give sips of water if fully conscious
- Take a cool shower or use a cold compress
- Seek medical help if symptoms don't improve

## HEAT STROKE

Throbbing headache, confusion

Seizures, loss of consciousness

No sweating; skin is hot, red, dry

Strong rapid pulse

Body temperature above 103F

### FIRST AID

- Take immediate action to cool the person until help arrives
- Move to shade or air conditioning
- Remove or loosen clothing
- Give water if able to swallow
- Apply cool cloths or ice packs

## CHAPTER 3

# PREVENTION: MONITORING & PREPARATION

NWS Heat Index		Temperature (°F)															
		80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
Relative Humidity (%)	40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
	45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
	50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
	55	81	84	86	89	93	97	101	106	112	117	124	130	137			
	60	82	84	88	91	95	100	105	110	116	123	129	137				
	65	82	85	89	93	98	103	108	114	121	128	136					
	70	83	86	90	95	100	105	112	119	126	134						
	75	84	88	92	97	103	109	116	124	132							
	80	84	89	94	100	106	113	121	129								
	85	85	90	96	102	110	117	126	135								
	90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127											
100	87	95	103	112	121	132											

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

When humidity increases at a given temperature, the heat index also increases.

Heat indices are color coded to provide four levels of risk.

## HEAT STRESS INDEX

### CAUTION

Indices in the 80's (°F)

Indicates workers may feel fatigued with prolonged physical activity in these types of conditions.

### EXTREME CAUTION

Indices range from 88 to 102 (°F)

Indicates possibility of sunstroke, heat cramps, and heat exhaustion with prolonged exposure.

### DANGER

Indices range from 104 to 127 (°F)

Sunstroke, heat cramps, and heat exhaustion indicated as likely outcomes of these conditions.

### EXTREME DANGER

Indices of 128 (°F) or higher

Indicates a high likelihood of heat stroke outcomes in these conditions.

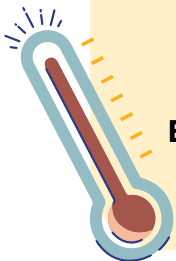
## WEATHER PRECAUTIONS TERMINOLOGY

**EXCESSIVE HEAT OUTLOOK** - Informs the public of a possible heat event in 3-7 days

**HEAT ADVISORY** - Typically issued within 12 hours of an extremely dangerous condition, with precautions to minimize illness  
(lowa: >100°F for 2+ days with nighttime low of >75°F)

**EXCESSIVE HEAT WATCH** - Warns of a pending *excessive heat event* within the next 1-3 days

**EXCESSIVE HEAT WARNING** - Issued within 12 hours of the onset of an extremely dangerous condition  
(lowa: >= 110°F for 2+ days with nighttime low of >=75°F)

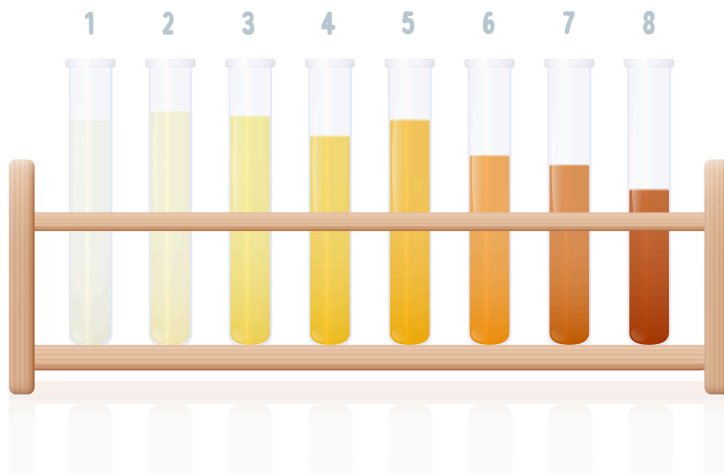


# CHAPTER 4

# HYDRATION

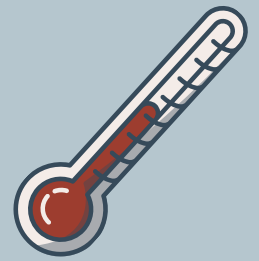


## URINE COLOR CHART



- 1 OVERHYDRATED**  
May result in electrolyte depletion. Reduce water intake or substitute some water intake with electrolyte fluids.
- 2 GOOD**  
Well hydrated. Continue to consume water at the recommended amounts.
- 3 FAIR**  
Acceptable hydration level. A little more liquid consumption wouldn't hurt throughout the day.
- 4 LIGHT DEHYDRATION**  
Slightly increasing water consumption throughout the day would be beneficial.
- 5 DEHYDRATED**  
Water consumption needs improvement.
- 6 DEHYDRATED**  
More fluids need to be consumed.
- 7 VERY DEHYDRATED**  
Not an emergency, but fluid intake must be increased or risk of severe dehydration symptoms is higher.
- 8 SEVERE DEHYDRATION**  
See Doctor

# Heat Illness RESOURCES



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## HOW WE REGULATE HEAT

View this article to look at human temperature regulation:

Cramer, Gagnon, Laitano, & Crandall. (2002). Human temperature regulation under heat stress in health, disease, and injury. *Physiological Reviews*. 102(4): 1579-2034.

- <https://www.journals.physiology.org/doi/epdf/10.1152/physrev.00047.2021>

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## TYPES OF HEAT ILLNESS

- Visit the CDC's FAQ about extreme heat: [https://www.cdc.gov/extreme-heat/prevention/?CDC\\_AAref\\_Val.html](https://www.cdc.gov/extreme-heat/prevention/?CDC_AAref_Val.html)
- Details on high-risk populations affected by extreme heat: [https://www.cdc.gov/extreme-heat/risk-factors/?CDC\\_AAref\\_Val.html](https://www.cdc.gov/extreme-heat/risk-factors/?CDC_AAref_Val.html)

The Mayo Clinic has great resources for each of the four heat illnesses detailed in this chapter:

- **Heat Rash:** <https://www.mayoclinic.org/diseases-conditions/heat-rash/symptoms-causes/syc-20373276>
- **Heat Exhaustion:** <https://www.mayoclinic.org/diseases-conditions/heat-exhaustion/symptoms-causes/syc-20373250>
- **Heat Stroke:** <https://www.mayoclinic.org/diseases-conditions/heat-stroke/symptoms-causes/syc-20353581>

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## PREVENTION: MONITORING & PREPARATION

- View heat stress index information on the National Weather Service website: <https://www.wpc.ncep.noaa.gov/html/heatindex.shtml>
- You can navigate from there to find the definitions of warnings in the recording, or navigate directly here: <https://www.weather.gov/safety/heat-vvw>
- OSHA's Heat Safety Tool (app) is discussed here: <https://www.osha.gov/heat/heat-app>

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## HYDRATION

- See Tips for Preventing Heat Illness, *Keeping Workers Well Hydrated* Poster: <https://www.osha.gov/heat/worker-information>

VIEW THESE  
LINKS FOR  
ADDITIONAL  
RESOURCES AND  
INFORMATION ON  
THE CONTENT  
PRESENTED IN  
THIS UNIT.