

Heat Stress



Do you know:

Heat stress is impacted by temperature, humidity, work activity and...

JSA:

- What's the forecast?
- Is adequate water available?
- How will crew be monitored and get adequate cool down breaks?

Controls:

- Drink water frequently during the day – stay hydrated (not more than 1.5 quarts/hour)
- Wear loose fitting clothes (light colors)
- Take breaks - cool down
- Eat small portions (fruits/salts/protein) during the day rather than one large meal

Team Work:

- Rotate job tasks
- Ensure the team stays hydrated
- Watch for the signs of heat stress/stroke
- Intervene when required

Environmental Factors:

- Temperature
- Humidity
- Wind

Your body's cooling systems depends on evaporative cooling

- High humidity = low evaporation rates = low cooling (heat retention)
- Low humidity = high evaporation rates = high cooling (heat dissipation)

HEAT STRESS INDEX

		% RELATIVE HUMIDITY																							
		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100				
TEMPERATURE	85	79	80	81	82	83	84	85	86	87	88	89	90	91	93	95	96	98	100	102	106	109	113	117	122
	90	84	85	86	87	88	90	91	93	95	96	98	100	102	106	109	113	117	122	126	132	138	144		
	95	88	90	91	93	94	96	98	101	104	107	110	114	119	124	130	136								
	100	93	95	97	99	101	104	107	110	115	120	126	132	138	144										
	105	97	100	102	105	109	113	118	123	129	135	142	149												
	110	102	105	108	112	117	123	130	137	143	150														
	115	107	111	115	120	127	135	143	151																
	120	111	116	123	130	139	148																		
	125	116	123	131	141																				
	130	122	131																						

Pre Plan Work – Rest –Water Intake

Heat Category	WBGT Index, (F°)	EASY WORK		MODERATE WORK		HARD WORK	
		Work/ Rest	Water Intake (Qt/h)	Work/ Rest	Water Intake (Qt/h)	Work/ Rest	Water Intake (Qt/h)
1	78-81.9	NL	½	NL	¾	40/20 min	¾
2 (Green)	82-84.9	NL	½	50/10 min	¾	30/30 min	1
3 (Yellow)	85-87.9	NL	¾	40/20 min	¾	30/30 min	1
4 (Red)	88-89.9	NL	¾	30/30 min	¾	20/40 min	1
5 (Black)	> 90	50/10 min	1	20/40 min	1	10/50 min	1

The work-rest times and fluid replacement volumes will sustain performance and hydration for at least 4 h of work in the specified heat category. Fluid needs can vary based on individual differences (± ¼ qt/h) and exposure to full sun or full shade (± ¼ qt/h).

NL= no limit to work time per hour.

Rest means minimal physical activity (sitting or standing), accomplished in shade if possible.

CAUTION: Hourly fluid intake should not exceed 1½ quarts.

Daily fluid intake should not exceed 12 quarts.

Assess the environment, Plan, Apply your knowledge

Primary factors contributing to heat stress

Environment

- Air temperature
- Airflow
- Humidity
- Radiant heat (e.g., sun, kiln)

Worker

- Acclimatization
- Hydration
- Clothing
- Medical conditions

Work

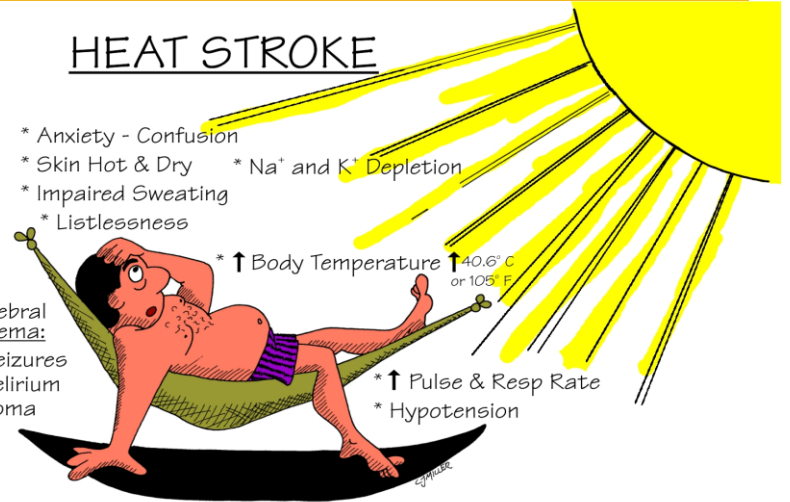
- Workload
- Work rate

Heat stress

Know the warning signs

HEAT STROKE

- * Anxiety - Confusion
- * Skin Hot & Dry
- * Impaired Sweating
- * Listlessness
- * ↑ Body Temperature ↑40.6° C or 105° F
- * ↑ Pulse & Resp Rate
- * Hypotension
- * Na⁺ and K⁺ Depletion
- Cerebral Edema:
 - * Seizures
 - * Delirium
 - * Coma



(Management - Cooling, Rest, Fluid & Electrolyte Support.)

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