

- assessment to mitigate exposure
- Consider removing line pack when performing non-critical fireline tasks following a risk
- Ensure clothing is clean to allow dissipation of heat and sweat from body
- from hazards on the fireline

**Follow clothing recommendations**

- Allow personnel to loosen clothing and remove gloves during rest periods when away
- Salt tablets are not recommended.
- high (very hot/extremely hot).
- Table salt may be added to food or eat more salty foods when the heat category is
- Encourage snacking throughout the work shift
- Ensure firefighters hydrate before, during, and after work shifts
- Cache water on fireline
- Spot checks by supervisor, and assigned buddy
- hour or 12 quarts per day

**Monitor personnel for hydration and food consumption**

- Encourage frequent drinking (water and sports drinks) Do not exceed 1 1/2 quarts per
- Reschedule non-mission critical tasks when HI is lower
- Ensure emergency medical response plan is in place, and known to personnel
- Adjust operational tactics during hottest part of day (e.g., bi-modal or reduce production). Set up buddy system/each firefighters to watch for signs of HRI
- Determine heat index hourly through weather observations

**Identified mitigations are in place**

**Heat Injury Mitigation(s)**

**Individual Risk Factors:**

The more factors, the higher the risk

**Sources of Heat**

Internal heat generated by physical labor

**Environmental conditions**

- High heat environments can restrict the body's ability to evaporate sweating and to cool itself
- Direct sunshine can increase heat index values up to 15°F

**Not acclimatized**

- Initial exposure (<4-5 days) of any of the following:
  - Increased heat exposure
  - Increased exertion levels of work/training
  - Lack of quality sleep

**Lower fitness level** requires more acclimatization time.

**Overweight**

**Minor illness**

**Taking medications**, either prescribed or over-the-counter and/or dietary aids. Example: Allergy or cold remedies, certain antibiotics, statins (cholesterol lowering drugs), ephedra and creatine

**Dehydration** occurs during prolonged exertion when fluid loss is greater than fluid intake.

**Excessive caffeine intake**

**Supplements** are not regulated and have potential to impact firefighters.

**Prior history of heat illness** – a heat stroke event at any point, or an episode of lesser HRI in previous 24-48 hours

**Skin disorders** such as heat rash and sunburn that prevent effective sweating



**HIP Pocket Guide**

(Heat Illness Prevention Guide)

The intent of this guide is to provide a concise collection of Heat Related Illness (HRI) prevention information for operational field use. Its contents are not absolute rules and HRI potential and prevention mitigations should be evaluated and balanced with all the risks associated with wildland fire operations.

This Guide includes:

- **Hazards**
- **Individual Risk Factors**
- **Fluid Replacement and Work/Rest Guide**
- **Heat Illness Mitigation**
- **Warning Signs and Symptoms of HRI**

**Hazards:**

- **Heat Index**, high ambient temperature and relative humidity
- **Exertion level** of training or work output, especially on several sequential days
- **Acclimatization** (and other individual risk factors – see reverse side)
- **Time of exposure**, duration of exposure will determine level of mitigation

Heat Index Risk and Mitigation Chart						
*Reference Heat Index Chart below*						
Heat Index	Risk Level	Moderate Work Mitigation		Arduous Work Mitigation		Protective Measures
		Rest per Hour	Water Intake per Hour	Rest per Hour	Water Intake per Hour	
Very Warm 80°F - 89°F	Caution	10 min.	3/4 qt.	20 min.	3/4 qt.	Basic heat safety and planning
Hot 90°F - 104°F	Moderate	20 min.	3/4 qt.	30 min.	1 qt.	<ul style="list-style-type: none"> <li>• Implement precautions and heighten awareness</li> <li>• Consider bi-modal shift</li> </ul>
Very Hot 105°F - 129°F	High	30 min.	3/4 qt.	40 min.	1 qt.	<ul style="list-style-type: none"> <li>• Additional precautions to protect workers</li> <li>• Implement bi-modal shift</li> <li>• Reduce production rates</li> </ul>
Extremely Hot ≥130°F	Very High to Extreme	40 min.	1 qt.	50 min.	1 qt.	<ul style="list-style-type: none"> <li>• Triggers additional aggressive protective measures</li> <li>• Implement bi-modal shift</li> <li>• Reduce production rates</li> </ul>

**Moderate Work** = Patrolling, hiking on level/moderate terrain, mop-up, calisthenics, etc

**Hard Work** = Initial Attack, fireline construction, hiking on steep terrain, endurance exercising, carrying weight, etc.

**Bi-Modal Work Shift** = Move essential work tasks to coolest part of operational period, and/or adjust tactics (patrol/holding, etc) during hottest part of day.

- **CAUTION:** Hourly fluid intake should not exceed 1 1/2 qts. Daily fluid intake should not exceed 12 qts.

**Index Heat Chart**  
Temperature (°F)

	84	86	88	90	92	94	96	98	100	102	104	106	108	110
10	81	82	84	85	87	89	90	92	94	96	98	100	102	104
15	81	83	84	86	88	90	92	94	96	98	101	103	106	108
20	81	83	85	86	88	90	93	95	97	100	103	106	109	112
25	82	83	85	87	89	92	94	97	100	101	106	110	113	117
30	82	84	86	88	90	93	96	99	102	106	110	114	118	122
35	83	85	87	89	92	95	99	102	106	110	114	119	124	129
40	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	84	87	90	93	96	100	104	109	114	119	125	131	136	144
50	85	88	91	95	99	103	108	113	118	124	131	137	144	152
55	86	89	93	97	102	107	112	117	124	131	138	145	154	162
60	88	91	95	100	105	110	116	123	129	137	145	153	162	171
65	89	93	98	103	107	115	121	128	136	145	153	162	172	
70	90	95	100	106	112	119	126	134	143	152	161	172	182	
75	93	98	104	110	117	124	132	141	151	160	172	180		
80	94	100	106	113	121	129	138	148	158	169	181			

Download the OSHA Heat Safety Tool App. free online through your application store.

**Radiant Heat** = sun/flame can increase HI values by up to 15°



## Warning Signs and Symptoms of Heat Stress and Illness

### Indications of Possible Heat Related Illness

<p><b>COMMON SIGNS/SYMPTOMS</b></p> <ul style="list-style-type: none"> <li>• Dizziness</li> <li>• Headache</li> <li>• Nausea</li> <li>• Unsteady walk</li> <li>• Weakness or fatigue</li> <li>• Muscle Cramps</li> </ul>	<p><b>IMMEDIATE ACTIONS</b></p> <ul style="list-style-type: none"> <li>• Stop current activity</li> <li>• Allow person to rest in shade</li> <li>• Take sips of water</li> <li>• Call for medical assistance to evaluate individual</li> </ul>
<p><b>SERIOUS SIGNS/SYMPTOMS</b></p> <ul style="list-style-type: none"> <li>• Hot body, high temperature</li> <li>• Altered mental status</li> <li>• Vomiting</li> <li>• Involuntary bowel movement</li> <li>• Convulsions</li> <li>• Weak or rapid pulse</li> <li>• Unresponsive/Unconscious</li> <li>• Hyperventilating</li> </ul>	<p><b><u>If no emergency medical personnel are available, call for ambulance or medical transport.</u></b>  <b>Immediately implement medical emergency plan and call for an ambulance and/or medivac for emergency transport while doing the following:</b></p> <ul style="list-style-type: none"> <li>• Lay individual down in shade until MEDEVAC or ambulance arrives</li> <li>• Remove clothing from individual</li> <li>• Apply ice packs, or move individual to vehicle with air conditioning</li> <li>• Pour or immerse body in cold water and fan</li> <li>• Give sips of water while awaiting ambulance (if conscious)</li> <li>• Monitor airway and breathing until ambulance or MEDEVAC arrive</li> <li>• Continue cooling during transport or until body reaches 100° F</li> </ul>

### Warning Signs and Symptoms of Heat Stress and Illness

An important sign that the firefighter is in a **serious life-threatening** condition is an altered mental status (with or without increased temperature).

**Ask the following questions:**

- **What is your name?** (Does not know their name.)
- **What month is it? What year is it?** (Does not know the month or year.)
- **Where are we/you?** (Is not aware of location or surroundings.)
- **What were you doing before you became ill?** (Does not know the events that led to the present situation.)

**Call for emergency MEDEVAC or ambulance**

### Indications of Possible Water Intoxication (Over-Hydration)

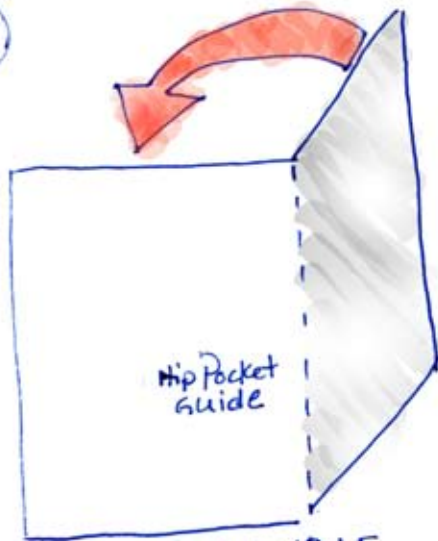
Water intoxication (hyponatremia) occurs when an individual drinks excessive amounts of water and decreases the sodium to water concentration in the body.

Signs and Symptoms: Confusion, Weakness, and Vomiting

For a full reference list for the HIP Pocket Guide, go to: <http://www.nwcg.gov/branches/pre/rmc/index.htm>

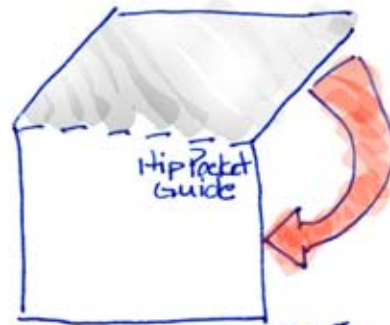


1



FOLD RIGHT HALF  
TO BACK

2



FOLD TOP HALF  
TO BACK

3



FOLD LEFT HALF  
TO BACK