Salt River Fire Department Safety Guidelines **Heat Stress Management** **JUL 2012 (Rev) 201.05B 1 of 3**	

The purpose of this procedure is to establish guidelines and responsibilities for minimizing the effects of heat stress to department members. The following practices are to be implemented **June 1 through September 30 of each year, "or"** whenever temperatures are expected to exceed 105 degrees or whenever the combination of air temperature and humidity equal a humiture index of 105 degrees.

HUMITURE (defined): 1. A measure of the discomfort most people feel because of the combined effects of atmospheric temperature and humidity; variously defined as Fahrenheit temperature plus some function of vapor pressure. 2. (Formerly) the average of the Fahrenheit temperature and the relative humidity.

.**MEMBER'S RESPONSIBILITIES**

Each member will be responsible to:

- Maintain proper rest/nutrition regimen
- Observe appropriate work/rest cycles
- Hydrate before, during, and after each shift (minimize coffee, tea, and cola products)
- Inform supervisor of any ill effects to heat (mandatory)

COMPANY OFFICER'S RESPONSIBILITIES

Company officers shall be responsible to monitor/manage:

- Consider altering Physical Training (PT) to morning hours, dependant on scheduling.
- Outdoor cardiovascular activity (tennis, racquetball, running, etc.) shall be limited to a maximum of 30 minutes.
- A minimum of 64 ounces (2 quarts) of fluid should be consumed during the 24-hour shift.
- Work/rest cycles--request a relief company and assignment to rehab after crew has consumed two bottles of air.
- Company activity and request additional resources as necessary.

COMMAND RESPONSIBILITIES

- "Early" request of additional resources.
- Establish a Rehab Group on all incidents when strenuous activity is anticipated; i.e.: Working structure fires, vehicle extrications, wildland fires.
- Assign companies to Rehab Group as needed or requested (companies shall remain in rehab for a minimum of 20 minutes).
- Utilize the practice of first company in, first company out routine.

DISPATCH RESPONSIBILITIES

- Dispatch will dispatch an additional Engine Company and a Rehabilitation unit to **"all working fires."**
- The objective is to dispatch the units to the scene promptly, and to arrive in a timely manner to reduce the effects of heat exhaustion.

The Heat Index

Relative Humidity	Environmental Temperature (F)										
	70º	75º	80º	85º	90º	95º	100º	105º	110º	115º	120º
0%	64º	69º	73º	78º	83º	87º	**91º**	**95º**	**99º**	**103º**	**107º**
10%	65º	70º	75º	80º	85º	**90º**	**95º**	**100º**	**105º**	**111º**	**116º**
20%	66º	72º	77º	82º	87º	**93º**	**99º**	**105º**	**112º**	**120º**	**130º**
30%	67º	73º	78º	84º	**90º**	**96º**	**104º**	**113º**	**123º**	**135º**	**148º**
40%	68º	74º	79º	86º	**93º**	**101º**	**110º**	**123º**	**137º**	**151º**	
50%	69º	75º	81º	88º	**96º**	**107º**	**120º**	**135º**	**150º**		
60%	**70º**	**76º**	**82º**	**90º**	**100º**	**114º**	**132º**	**149º**			
70%	70º	77º	85º	**93º**	**106º**	**124º**	**144º**				
80%	71º	78º	86º	**97º**	**113º**	**136º**					
90%	71º	79º	88º	**102º**	**122º**						
100%	72º	80º	**91º**	**108º**							

PREVENTIVE MEASURES

Fitness
Higher levels of fitness will insure that the body is working at peak efficiency, which means it will require less effort to perform the same work. This will produce less body heat and better dissipation of heat that is produced.

Acclimatization
This technique allows the body to become accustomed to the heat by exposing it to heat in a controlled setting over a period of time. The body has the opportunity to make those adjustments necessary to better compensate for the buildup of heat. To become better acclimatized to heat, the wearing of turnout gear each shift and performing some light exercises for a period of 10-15 minutes would suffice. The improvement in heat tolerance is associated with increased sweat production, lowered skin and body temperature, and a reduced heart rate.

Fluids
The amount of water lost during firefighting is estimated to be approximately one to two liters per hour or 10% of total plasma volume. It is essential to maintain adequate amounts of water and sodium chloride in the body. The best approach is to make a conscious effort to drink water at periodic intervals, regardless of thirst.

Clothing
Depending on the type of clothing worn heat transfer can be either enhanced or inhibited. Cottons and other natural fabrics tend to whisk the water away from the skin and push it to the outside where it can evaporate. Most synthetics restrict the passage of the water, which makes them feel hotter. (Consider the change of uniform to cotton T-shirts)

Protective clothing provides protection from the heat of the fire and the S.C.B.A. provides fresh air – both are essential pieces of equipment for safety. However, this same protective equipment effectively blocks all of the body's capability to dissipate the rising body heat. The newest designs of protective clothing are designed to maximize heat transfer, particularly with Gore-Tex vapor barriers that allow the internal pressure to squeeze the sweat to the outside of the coat, but there is no way to make this 100% effective as of this writing.