

SUNLIGHT, HOT WEATHER, AND YOUR HEALTH

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Soon it will be summertime in the desert southwest. The arrival of Summer brings two serious health concerns; namely hot temperatures and brilliant sunlight. Excessive heat can put your body under stress and the bright sunlight can cause severe sunburn.

Excessive Heat: Daily maximum temperatures of 105° to 115°F do occur on the NTS, primarily in July and August. However, hot weather can begin in May and extend into early October. Some examples of extremely high temperatures that have been measured on the NTS are listed in the table below.

NTS LOCATION	TEMPERATURE °F	NTS LOCATION	TEMPERATURE °F
WELL 5B	115	YUCCA DRY LAKE	109
GATE 510	114	AREA 1	110
AREA 25	112	AREA 2	110
BEEF	109	AREA 16	107

As atmospheric temperatures approach the normal, deep-body temperature (98.6°F) physical discomfort can be replaced by physical danger. The discomfort we feel is a warning signal from our body that it is having difficulty maintaining the constant deep-body temperature. If this constant temperature is to be sustained, the temperature of your skin must remain 20°F cooler than the deep-body temperature. To regulate your internal temperature, your body makes use of the process of evaporation to cool your skin as perspired water is evaporated. This process is quit efficient in the normally dry desert; however, there are limits as the air temperature begins to exceed 102°F. Remember, the perspired water must be replaced, or your body will be in physical danger. Moreover, as the relative humidity of the air increases, evaporation from your skin slows, reducing the cooling efficiency. Should your body begin to over heat, you must become aware of several critical warning signals of heat disorder.

Heat Disorders refers to several clinically recognizable syndromes relating to excessive exposure to very hot weather. The disorders generally have to do with a reduction or collapse of the body's ability to shed heat by circulatory changes and sweating, or with a chemical imbalance caused by too much sweating. Heat disorders strike individuals of any age. The severity of the disorder tends to increase with age. The symptoms and degrees of heat disorders and first-aid measures are:

HEAT DISORDERS	SYMPTOMS	FIRST-AID
Heat syncope (fainting)	Simple fainting may occur suddenly after exertion in a hot environment	Get out of the heat; drink plenty of fluids; rest lying down in a cool place. Receive professional evaluation at a medical facility.
Heat cramps	Painful spasms of voluntary muscles, contraction of flexor muscles in fingers, then larger muscles in legs and abdominal wall.	Ingest large amounts of water. Rest in a cool place, massage sore muscles. Receive professional evaluation at a medical facility.
Heat exhaustion	Profuse sweating, weakness, dizziness, and sometimes heat cramps. Skin is cold and pale, clammy with sweat, pulse is thready and blood pressure is low.	Move to cooler environment immediately. Loosen or remove clothing, cool down with water and fanning. Apply cold compresses, seek medical help, call 911. Give victim water or Gatorade to sip. No caffeine products.
Heat stroke	Dizziness, nausea, headache, heat cramps, small pupils, and weakness. Sweating stops just before heat stroke. Then body temperature rises sharply, often to 106°F or more, pulse is bounding and full, blood pressure elevated. Delirium or coma is common. Skin is hot, red, and dry.	Heat stroke is very serious. Medical care is urgently needed; call 911. Move victim to cooler, indoor environment. Wrap victim in cool wet sheets or clothing and fan for faster evaporation (cooling). It is not advised to give anything by mouth until stabilized.

Some Safety Rules for Hot Weather:

Reduce food intake. Drink plenty of water Slow down
 Dress for summer - wear lightweight clothing. Avoid dark colors
 Stay salty - take a salt table (if your diet permits)
 Don't get too much sun - try to get out of the heat for a few hours each day

Know the symptoms of heat syndrom and the proper first aid
Wear a hat Don't travel alone Travel with extra water
Tell someone where you are going and when you expect to return

Fluid Replacement Guide:

AMBIENT TEMPERATURE(°F)	RECOMMENDED WATER INTAKE
LESS THAN 103	½ PINT EVERY ½ HOUR
103 TO 106	½ PINT EVERY 15 MINUTES
GREATER THAN 106	½ PINT EVERY 10 MINUTES

Sunlight: Light from the Sun is rich in ultraviolet (UV) radiation. It is this radiant energy that burns your skin. A reddening of the skin is referred to as erythema. Overexposure to UV is thought to be the primary cause of skin cancer, although the disease may not appear for decades.

The World Meteorological Organization (WMO), in collaboration with the UV Monitoring and Assessment Program (UMA), has proposed the a Minimal Erythema UV Dose (MED) as a possible index for public health warnings. The biological effectiveness of UV radiation is measured in MED/hr. One MED is equal to 200 J/m². One MED/hr would cause minimal redness of the average skin after one hour exposure to UV radiation. If the UV flux is 3.0 MED/hr, the exposed individual is receiving three times the minimum recommended dose.

The sunlight (UV) at the NTS and in Las Vegas is very intense during the summer months. Average hourly solar UV data collected daily at the Desert Rock Meteorological Observatory. These data have been converted to MED/hr. The data reveal that for June through August the UV flux can be between 3.0 and nearly 5.0 MED/hr between 10 a.m. and 2 p.m. PDT. During this 4-hr period, unprotected fair skin would begin to redden in approximately 15-20 min.

Some Protective Actions:

UV light should be of special concern for those who work outside in conditions with little or no shade. Simple protective actions should be taken to reduce the risk of sunburn and skin cancer. These include:

- Cover up with clothing. Wear a hat
- Wear sun screen with a sun protection factor (SPF) of at least 15
- Wear UV-blocking sunglasses Restrict "sunbathing"