

HEAT WAVE

What is Heat wave?

A heat wave is a combination of temperature and humidity for a prolonged period. Generally, temperatures are more above the average high temperature for the region. It is an extended period of very high summer temperature with the potential to adversely affect communities. High temperatures are often accompanied by high humidity, that the body cannot tolerate are defined as extreme heat. A heat wave is a very dangerous situation and major threat to lives. According to the World Meteorological Organisation(WMO), 1998 was the hottest year on record.

Over the last 25 years the average global temperature rose by 1 degree Fahrenheit, or 0.6 degrees Celsius. The Intergovernmental Panel on Climate Change (IPCC) 's projected rise in temperature for this century is a global average, but the temperature is expected to rise more over land, where people live, than over sea. As temperatures continue to climb, the toll of heat waves in individual countries could jump from the thousands to the tens of thousands. The World Meteorological Organization estimates that the number of heat-related fatalities could double in less than 20 years.

Already we are seeing evidence of more frequent heat waves. In India, death tolls from heat that were recorded over an entire summer some 10 years ago are now occurring in just one week. Some of the increase is due to urbanization, a trend that is expected to continue for the foreseeable future.

Heatwave is also one of the major disaster for many countries for lives lost like other natural disasters. Many heat related deaths go unreported because they are taken to be the consequences of the existing ailments. In Orissa, heat wave caused 2042 deaths in 1998 and more than 1200 deaths in 2002 southern India. Temperatures have risen to between 45 and 50 degrees Celsius (113 to 122 degrees Fahrenheit), nearly 10 degrees above the normal level, with the highest reading of 50 degrees reported. Apart from death, every day more and more people have been admitted with suffering sunstroke and severe dehydration, with vomiting and high fever.

Effect on Human beings: In many parts of world , every summer , thousands of people suffer from heat stress when their bodies absorb more heat than they can expel. Depletion of salt and electrolyte in the body may cause heat cramp, hard work under the direct sun may lead to heat exhaustion. Usually , it is the cumulative effect of hot days without the relief of cool nights and exposure to exhaustion.

Heat can kill by pushing the human body beyond its limits. Under normal conditions, the body's internal thermostat produces perspiration that evaporates and cools the body. However, in extreme heat and high humidity, evaporation is slowed and the body must work extra hard to maintain a normal temperature. ***Elderly people, young children, and those who are sick or overweight are more likely to become victims of extreme heat.*** Because men sweat more than women, they are more susceptible to heat illness because they become more quickly dehydrated.

People living in urban areas may be at greater risk from the effects of a prolonged heat wave than people living in rural regions. While people in rural areas generally get some relief from the heat when temperatures fall at night, urban areas stay warmer around the clock. Air pollution, which usually is worse in cities than in the countryside, can also exacerbate the health-damaging effects of high temperatures by further stressing the body's respiratory and circulatory systems. In

addition, asphalt and concrete store heat longer and gradually releases heat at night, which produces significantly higher nighttime temperatures in urban areas known as the "urban heat island effect."

Heat wave caused unfold misery to people all over the world. In 1198, about 1500 people were died in China and in 1997 about 2000 people fell to heat wave in Greece. Similarly in India the heat wave took 3028 lives in the year 1998 and more than 2000 people in the year 2002. Heat wave also caused death of wild life such as monkeys were died in UP and in most of the zoos in India.

Livestock: Like human beings, animals too suffer, particularly when they are left in the direct sun and they do not get adequate water. Domestic animals and poultry birds are particularly vulnerable to heat wave.

Agriculture and crop: Heat waves also damage plants, crops and vegetables. When searing winds blow and the temperature rises to around 45^o C, exotic plants perish. When temperature exceeds 45^o C for a number of days even the traditional species suffer, particularly if they do not receive moisture regularly. In the grazing field not a single blade of grass is available for the cattle.

Infrastructure: During heat wave, the railway lines can expand to the point where they buckle and caused derailment of train. Road damages can also occur with bitumen melting and concrete expanding and having cracks. Even bridges may have similar type of damages.

Water : During hot summer water consumption increases drastically and often causing shortage of drinking water. Lack of water in most of the wells, pond, tubewell and other bodies during hot summer seasons, which has an adverse effect on human being and animal population.

Under normal circumstances, humans maintain a body temperature around 98.6 degrees Fahrenheit. When subject to extreme heat, the body attempts to maintain this ideal temperature by varying blood circulation and perspiring. When the internal body temperature rises above 104 degrees Fahrenheit, vital organs are at risk. If the body temperature is not brought down, death follows.

The threshold ambient temperature at which more people are at risk for heat-related health problems varies greatly by location. In general, when summer temperatures range 10 degrees Fahrenheit or more above the norm, incidences of heat-related illness increase dramatically. High humidity compounds the effects of high heat by reducing evaporation, rendering perspiration a less-effective cooling mechanism. When excessive heat prevails for more than two consecutive days, the risk of heat sickness and death escalates. Health and social services may be overwhelmed.

Heat Wave conditions can result in physiological strain, which could even result in death. Orissa, Andhra Pradesh and Tamil Nadu have experienced severe heat wave conditions since last few years during April to mid June and nearly 5,000 people died of heat stroke.

Surviving with Heat wave:

Heat waves can be serious but it is one of the disasters, which can be managed easily. To minimise the impact during the heat wave and to prevent serious ailment or death because of heat stroke, you can take the following measures:

- Avoid going out in the sun, especially between 12.00 noon and 3.00 p.m.
- Drink sufficient water and as often as possible, even if not thirsty
- Wear lightweight, light-coloured, loose, and porous cotton clothes. Use protective goggles, umbrella/hat, shoes or chappals while going out in sun.
- Avoid strenuous activities when the outside temperature is high. Avoid working outside between 12 noon and 3 p.m.
- While travelling, carry water with you.
- If you work outside, use a hat or an umbrella and also use a damp cloth on your head, neck, face and limbs
- If you feel faint or ill, see a doctor immediately.
- Use ORS, homemade drinks like lassi, torani (rice water), lemon water, buttermilk, etc. which helps to re-hydrate the body.
- Keep animals in shade and give them plenty of water to drink.
- Keep your home cool, use curtains, shutters or sunshade and open windows at night.
- Use fans, damp clothing and take bath in cold water frequently.

General tips for treatment of an affected person:

- Lay the person in a cool place, under a shade. Wipe her/him with a wet cloth/wash the body frequently. Pour normal temperature water on the head. The main thing is to bring down the body temperature.
- Give the person ORS to drink or lemon sarbat / torani (Rice water) or whatever is useful to re-hydrate the body.
- Take the person immediately to the nearest health centre. The patient needs immediate hospitalisation, as heat strokes could be fatal.

Some of the definition related to Heat Wave/ stroke needs to understand to prevent human causality:

- **Heat index:** A number in degrees Fahrenheit (F) that tells how hot it really feels when relative humidity is added to the actual air temperature. Exposure to full sunshine can increase the heat index by 15 degrees.
- **Heat cramps:** Heat cramps are muscular pains and spasms due to heavy exertion. Although heat cramps are the least severe, they are often the first signal that the body is having trouble with the heat.
- **Heat exhaustion:** Heat exhaustion typically occurs when people exercise heavily or work in a hot atmosphere or direct sun, humid place where body fluids are lost through heavy sweating. Blood flow to the skin increases, causing blood flow to decrease to the vital organs. This results in a form of mild shock. If not treated, the victim's condition will worsen. Body temperature will keep rising and the victim may suffer heat stroke.
- **Heat stroke / Sun stroke :** Heat stroke is life-threatening. The victim's temperature control system, which produces sweating to cool the body, stops working. The body temperature can rise so high that brain damage and death may result if the body is not cooled quickly.

Sign and symptoms :

- **Heat exhaustion:** *Cool, moist, pale, or flushed skin; heavy sweating; headache; nausea or vomiting; dizziness; and exhaustion.*

Body temperature may be normal, or is likely to be rising.

- **Heat stroke:** *Hot, red skin; changes in consciousness; rapid, weak pulse; and rapid, shallow breathing.*

Body temperature can be very high -sometimes as high as 105⁰ F. If the person was sweating from heavy work or exercise, skin may be wet; otherwise, it will feel dry.

Specialized Heat Emergency treatment:

- **Heat stroke: Heat stroke is a life-threatening situation.** Help is needed fast. Call your local emergency help number. Move the person to a cooler place. Following process followed:
 - Quickly cool the body. Immerse victim in a cool bath, or wrap wet sheets around the body and fan it.
 - Watch for signals of breathing problems.
 - Keep the person lying down and continue to cool the body any way you can.
 - If the victim refuses water, is vomiting, or there are changes in the level of consciousness, do not give anything to eat or drink.
- **Heat cramps:** Shift the person to a cooler place and allow the affected person to take rest in a comfortable position.
 - Lightly stretch the affected muscle and replenish fluids.
 - Give a half glass of cool water every 15 minutes.
 - Do not give liquids with alcohol or caffeine in them, as they can cause further dehydration, making conditions worse.
- **Heat exhaustion:** Get the person out of the heat and into a cooler place.
 - Remove or loosen tight clothing and apply cool, wet cloths, such as towels or sheets.
 - If the person is conscious, give cool water to drink. Make sure the person drinks slowly. Give a half glass of cool water every 15 minutes.
 - Let the victim rest in a comfortable position, and watch carefully for changes in his or her condition.

Acclimatisation:

People at risk are those who have come from a cooler climate to a hot climate. You may have such a person(s) visiting your family during the heat wave season. They should not move about in open field for a period of one week till the body is acclimatized to heat and should drink plenty of water. Acclimatization is achieved by gradual exposure to the hot environment during heat wave.

What to Do During Extreme Heat:

- **Slow down. Avoid strenuous activity.** Reduce, eliminate or reschedule strenuous activities. High-risk individuals should stay in cool places. Get plenty of rest to allow your natural "cooling system" to work. If you must do strenuous activity, do it during the coolest part of the day, which is usually in the morning and evening. Many heat emergencies are experienced by people exercising or working during the hottest part of the day.

- **Avoid too much sunshine.** Sunburn slows the skin's ability to cool itself. The sun will also heat the inner core of your body, resulting in dehydration. Use a sunscreen lotion with a high sun protection factor (SPF) rating.
- **Postpone outdoor games and activities.** Extreme heat can threaten the health of athletes, staff, and spectators of outdoor games and activities.
- **Avoid extreme temperature changes.** A cool shower immediately after coming in from hot temperatures can result in hypothermia, particularly for elderly and very young people.

What Donot Do During Extreme Heat:

- Do not leave children or pets in parked vehicles
- Avoid alcohol, tea, coffee and carbonated soft drinks, which dehydrates the body.
- Avoid high-protein food

Preparedness initiaives:

- Traditional knowledge may be used to protect life and property from the heat wave
- Attention may be paid to the constrution/prevervation of envirnoment
- Large scale afforestation should recevie priority