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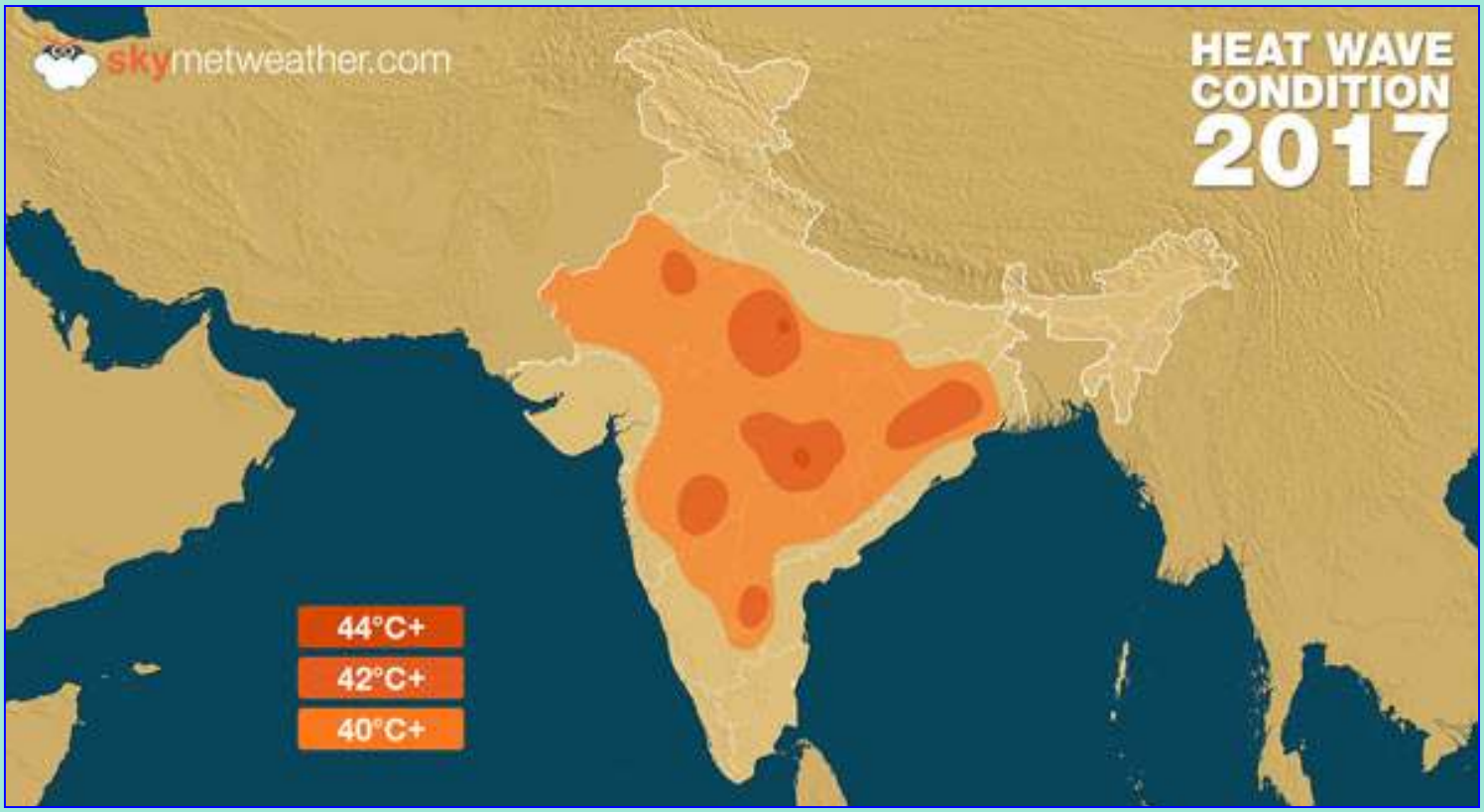
Special Supplement

Heat Waves

A Heat Wave is a period of abnormally high temperatures, more than the normal maximum temperatures that occur during the summer season in various parts of India. Heat Waves typically occur between March and June, and in some rare cases even extend till July. The intense heat wave that is sweeping across India could be another manifestation of climate change. The extreme temperatures and resultant atmospheric conditions adversely affect people living in these regions as they cause physiological stress, sometimes resulting in death.



AccuWeather, an American media company that provides commercial weather forecasting, has reported that dangerous heat waves will grip much of India, during last week of April with no relief in sight. Majority of the states are expected to experience daily high temperatures of 43° C or more with warmest locations recording temperatures exceeding 46° C.

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One cause of this extreme heat wave has been unusual northwesterly winds. These anomalous northwesterlies have overpowered the moist southerly winds that typically come off the water and kept pre-monsoon showers firmly offshore. This deviation from the normal winds has allowed hot air from the desert areas to the northwest to spread over much of the country.

Source: www.climate.gov

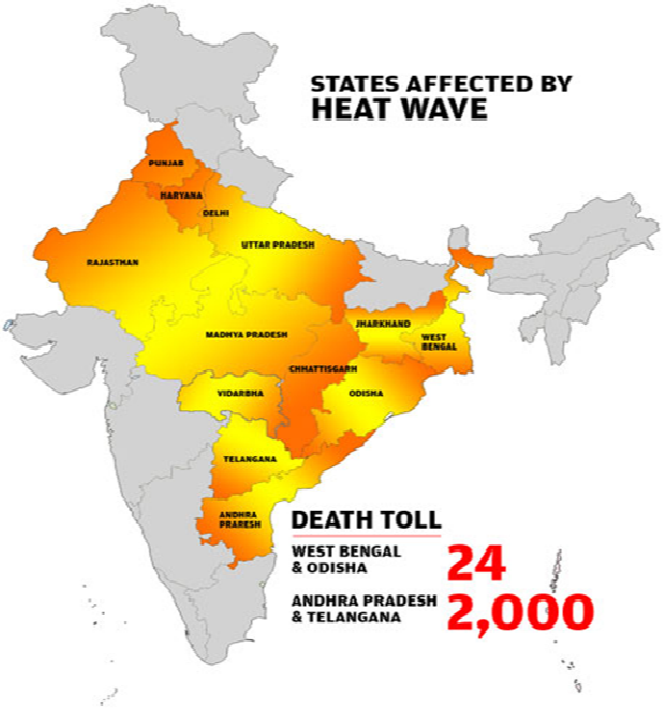
The Indian Meteorological Department (IMD) has given the following criteria for Heat Waves:

1. Heat Wave need not be considered till maximum temperature of a region reaches atleast 40°C for Plains and atleast 30°C for Hilly regions.
2. When normal maximum temperature of a station is less than or equal to 40°C, Heat Wave Departure from normal is 5°C to 6°C Severe Heat Wave Departure from normal is 7°C or more.
3. When normal maximum temperature of a station is more than 40°C Heat Wave Departure from normal is 4°C to 5°C Severe Heat Wave Departure from normal is 6°C or more.
4. When actual maximum temperature remains 45°C or more irrespective of normal maximum temperature, heat waves should be declared.

Higher daily peak temperatures and longer, more intense heat waves are becoming increasingly frequent globally due to climate change. India too is feeling the impact of climate change in terms of increased instances of heat waves, which are more intense in nature with each passing year, and have a devastating impact on human health thereby increasing the number of heat wave casualties.

Heat Wave conditions can result in physiological strain, which could even result in death. National Disaster Management Authority (NDMA) says that between 1992 and 2015 heat waves killed 22,562 people. Other health implications include dehydration, heat cramps, heat exhaustion and/or heat stroke.

Majority of the states get affected by this heat wave as presented in the pictorial representation of the year 2015.



Climate records show that human-induced global warming had turned 2014 into the hottest year on record. Eight out of the 10 warmest years in India were during the past decade (2001 to 2010), making it the warmest decade on the earth. Climate researchers say more heatwaves were expected as globally temperatures had risen. Night temperatures are rising too, with metros like Ahmedabad and Delhi reporting 39 and 36 degree Celsius.

Daily death toll (May 2015)

Date	Deaths in Andhra Pradesh	Deaths in Telangana
May 26	403	220
May 25	390	232
May 24	485	249
May 23	391	251
May 22	204	223
May 21	78	147
Total	1951	1322

Source: Telugu Daily Eenadu

Two Telugu states were worse affected by Heat Waves outnumbering with huge margin, death toll of whole of India combined due to Heat Waves. Thousands of people are reported to have lost lives consecutively for past couple of summers.

At least 3273 people have lost their lives in a span of 6 days. This is not the first time that so many people lost their lives in the two Telugu speaking states. In 2002-03 about 3000 people had died within a week, highest in the country. The state had witnessed similar prolonged heat waves in 1996 and 1998.

Vulnerable groups

Majority of the workforce in India is engaged in the unorganized sector where there are no formal mechanisms to impart flexibility in working hours during peak summer season. The unorganized workers include the farming or livestock rearing people or construction workers or daily wage labour or brick kiln workers or hawkers or workers in blast furnaces etc.

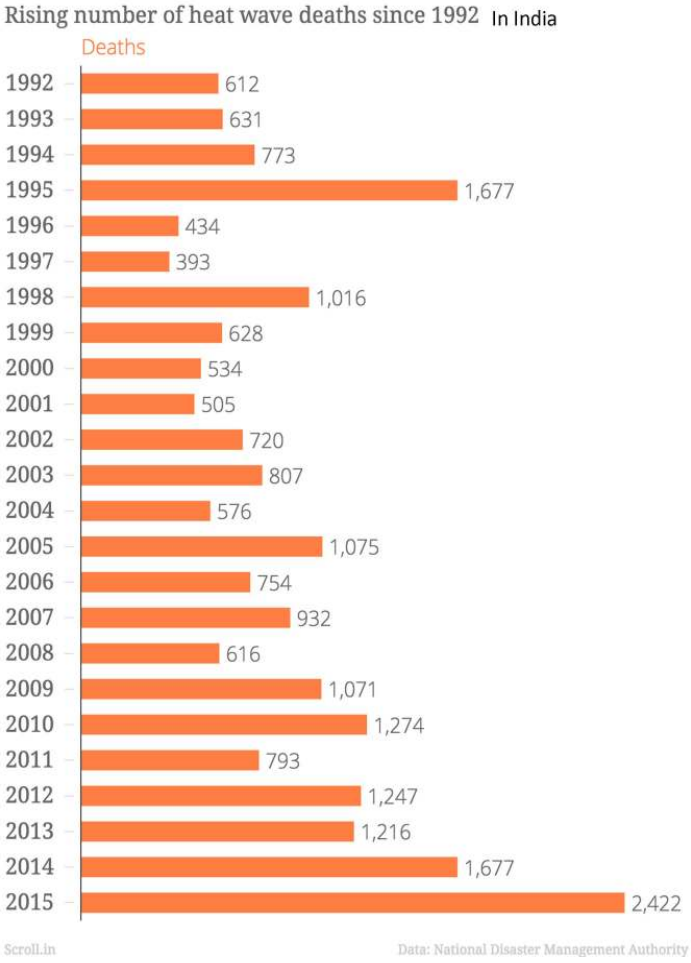
The workers in these sectors have limited choice at their disposal due to lack of alternative livelihoods, flexibility working hours, subsistence wages and low savings, which constrains them to continue with livelihood activity even during rising summer heat without which their lives are at risk due to poverty. Government's regulation through labour laws is limited, as in majority of the cases people who run the business collude with officials of labour department thereby shielding themselves from government's sight.

The condition of old aged people from rural poor families becomes worse during this period. They are already cornered from multiple fronts and heat wave is an additional dimension. They are highly prone to fatalities owing to their weak health condition.

Migration to urban areas by the unskilled workforce puts them at risk in the event of heat waves. Majority of them are involved in daily labour work, which is often back breaking with more than 10 hours of time spent in the field either working or searching for work. Urban areas aggravate as heat islands,due to the concrete structures with declining percentage of shades increasing their vulnerability.

A survey in 2011 and 2012 by US-based Natural Resources Defence Council (NRDC) and Indian Institute of Public Health, Gandhi nagar (IIPH-G) found that 10 percent of construction workers in the city of Ahmedabad were hospitalised at least once during summer, for heat-related sickness. Slum residents are the worst sufferers because their localities are congested and their roofing material does not provide enough protection from heat.

The effects are not limited only to the informal sectors. In the formal sector, this vulnerability is clearly visible in occupations like sales and marketing, traffic police, community professionals in development sector and courier service delivery boys. All these sections of employees are subjected to harsh working environments during summers as they have to remain in the field during peak hours. Even the 10 am to 5 pm job profile employees are also at the risk of suffering from heat stroke as the summer heat sets in as early as 8 am in the morning.



Another vulnerable category is the school going children; though reforms have been brought in, in the form of early summer vacation, still some schools in the name of competition continue to grill students in the name of better ranks through special classes during summer. School curriculum pays limited heed to educating students about these types of vulnerabilities.

The vulnerability of above sections arises from the fact that majority of them have limited awareness of heat waves and precautions to be taken for mitigation which includes the meagre outreach of government's initiatives.

Dos and Don'ts during heat wave

To minimise the impact during heat wave and to prevent serious ailment or death because of heat stroke, the following measures could be taken by individuals or organizations:

1. Avoid going out in the sun, especially between 12.00 noon and 3.00 p.m. Avoid strenuous activities, when outside temperature is high.
2. 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.
3. Avoid alcohol, tea, coffee and carbonated soft drinks, which dehydrates the body.Avoid high-protein food and do not eat stale food.
4. Encourage workers to drink plenty of water – about one cup of cool water every 15 to 20 minutes, even if they are not thirsty – and to avoid alcohol, coffee, tea and caffeinated soft drinks that dehydrate the body.

5. Help workers adjust to heat by assigning a lighter workload and longer rest periods for the first five to seven days of intense heat. This process needs to start all over again, when a worker returns from vacation or other absence.
6. Encourage workers to wear lightweight, light-colored, loose-fitting clothing. Workers should change their clothes, if they get completely saturated.
7. Use general ventilation and spot cooling at points of high heat production. Good airflow increases evaporation and cooling of the skin.
8. Train first-aid workers to recognise and treat the signs of heat stress and ensure that all workers know who have been trained to provide such aid. Train supervisors to detect early signs of heat-related illness and permit workers to interrupt their work, if they become extremely uncomfortable.
9. Consider a worker's physical condition when determining fitness to work in hot environments. Obesity, lack of conditioning, pregnancy and inadequate rest can increase susceptibility to heat stress.
10. Alternate work and rest periods, with rest periods in a cooler area. Shorter, more frequent work-rest cycles are best. Schedule heavy work for cooler times of the day and use appropriate protective clothing.
11. Monitor temperatures, humidity, and workers' responses to heat, at least hourly.

If you think someone is suffering from the heat:

1. Move the person to a cool place under the shade.
2. Give water or a rehydrating drink (if the person is still conscious).
3. Fan the person.
4. Consult a doctor if symptoms get worse or are long lasting or the person is unconscious.
5. Do not give alcohol, caffeine or aerated drink.
6. Cool the person by putting a cool wet cloth on his/her face/body.
7. Loosen clothes for better ventilation.

Fighting Heat Wave - the Ahmedabad Way: Case Study

Led by Ahmedabad Municipal Corporation (AMC), the plan is a response to the deadly heat wave in 2010 when the city's temperature spiked to 46.8 degree Celsius and killed hundreds of people. It is a three pronged strategy to create awareness-making people aware of heat stroke and precautions; develop a warning system that will forecast weather 7 days in advance; increase capacity building of health workers. AMC installed thermometers at various spots and used pamphlets and other mass awareness tools such as billboards to raise awareness of the dangers of extreme heat among children, people who work outdoors and other vulnerable people, especially those who live in slums. AMC has also asked the labour department to consider extended afternoon break or alternate working hours for labourers during summer months.

Way ahead:

IMD along with National Disaster Management Authority (NDMA) is exhorting the states to implement Heat Wave Action Plans. Dealing with sun's fury:

1. ***Warning system –*** A colour-coded early warning system to alert the public of the likelihood of a heat wave. A red alert, for instance, will imply maximum temperature rise of 6 degree Celsius or more.

2. ***Precautionary measures –*** Summer shelters for the homeless souls and distribution of relief supplies for those who have to toil in the sun for earning their livelihoods so that they can avoid hazardous labour.
3. ***Safety standards –*** Putting up of safety regulations and standards for various sectors which involve human resources working outside in the sun thereby taking into account perils of the summer heat.
4. ***Hydration –*** Supply of oral re-hydration supplements at railway stations and bus stands.
5. ***Treatment –*** Hospitals must have extra beds in ventilated spaces. Heat stroke rooms of health centres with coolers.
6. ***Administrative changes –*** A committee at the local level to certify deaths due to sun strokes.
7. ***Nodal officer –*** Appointment of a Nodal officer to ensure that communication, awareness, heat mortality tracking system at place.
8. ***MGNREGA –*** Making sure that labourers employed in MGNREGA schemes aren't assigned work during certain times of the day-in case of heat wave like conditions. Governments in both the Telugu states had taken up the decision to change the timings of work to 6 am to 12:30 pm, other states need to follow the suit.
9. ***NGOs and individual initiatives –*** The role of NGOs and individual initiatives is increasingly visible in educating people about extreme summer conditions, providing water and ragi malt during summers through little kiosks organized at every corner in metro cities. Furthermore, some form of encouragement from government is needed to appreciate their efforts and also for enhancement of the same.

Compared to many of the natural disasters that NDMA has in its list (avalanches, cyclones, cloudbursts, droughts, earthquakes, tsunamis, fires, floods, hailstorms, landslides, pest attacks, and frost and cold waves), most of the heat wave deaths are preventable because its onset and duration are easily predictable and the relief measures are simple. Despite its predictability, periodic incidence and high levels of mortality, governments have done precious little to mitigate its impact on people despite of the fact that its effect is intensively visible for more than a decade. The country which aspires to emerge as a super power should not lag itself from arriving at efficient methodologies to save the lives of its people from rising summer heat. ❖