

**GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOK SABHA
UNSTARRED QUESTION No. 617
TO BE ANSWERED ON WEDNESDAY, FEBRUARY 6, 2019**

HEAT WAVES

617. SHRI DEVUSINH CHAUHAN:

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) whether the Government has taken note of global rise in temperature especially in Indian continent in the last five years and if so, the details thereof;**
- (b) whether a large number of deaths due to intensive heat waves were reported in various parts of the country and if so, the details thereof, State-wise;**
- (c) whether the Government has conducted or proposes to conduct a detailed scientific study on the 'heat wave' phenomenon in various parts of the country and if so, the details thereof including Kerala;**
- (d) whether the Government has also assessed the impact of intensive heatwaves on human beings and flora and fauna of the country and if so, the details thereof; and**
- (e) the remedial measures taken/proposed to be taken by the Government to address the issue?**

ANSWER

**MINISTER FOR MINISTRY OF SCIENCE AND TECHNOLOGY AND
MINISTRY OF EARTH SCIENCES
(DR. HARSH VARDHAN)**

- (a) Yes Madam, the Government has taken note of rise in global temperatures. The temperatures over India also showed a noticeable rise. Average annual temperature and the departures from the long term normal over the country as a whole during the last five years (2014 to 2018) are given in the table below;**

YEAR	ANNUAL MEAN TEMP (°C)	DEPARTURE (°C)
2014	25.73	0.23
2015	25.92	0.42
2016	26.20	0.70
2017	26.04	0.54
2018	25.90	0.39

Average temperatures over India during 2018 were significantly above normal. During the year, annual mean surface air temperature, averaged over the country, was +0.39°C above (1981-2010 period) average. The year 2018 was the sixth warmest year on record since nation-wide records commenced in 1901. However, this was substantially lower than the highest warming observed over India during 2016 (+0.7°C). It may also be mentioned that the Global mean surface temperature anomaly during 2018 was +0.98°C.

- (b) There was a significant increase in number of death due to heatwave till 2015. Deaths due to Heat wave during 2010-2018 years are given in table below.**

Deaths due to Heat Wave since 2010	
Year	Deaths due to Heat wave
2010	269
2011	12
2012	729
2013	1433
2014	548
2015	2081
2016	700
2017	375
2018	20

State wise statistics for the year 2017 and 2018 are given in Annexure. However, the deaths due to heat waves are not reported from Kerala. It is further mentioned that due to improved forecast and heat action plan by states the casualty has been reduced during 2016-2018.

- (c) A latest study shows that heat waves have increased in many parts of the country. In India, the heat wave (HW) conditions are generally experienced during the period from March to July with HW events mostly experienced during the middle 3 months period of April to June (AMJ) It has been observed that during hot weather season (AMJ), stations from the north, northwest, central, east India and northeast Peninsula (together called core HW zone (CHZ)) are most prone for heat wave (HW)/ severe heat wave (SHW) days with highest frequency during May. The CHZ covers states of Punjab, Himachal Pradesh, Uttarakhand, Delhi, Haryana, Rajasthan, Uttar Pradesh, Gujarat, Madhya Pradesh, Chhattisgarh, Bihar, Jharkhand, West Bengal, Orissa and Telangana and met subdivisions of Marathwada, Vidarbha, Madhya Maharashtra and coastal Andhra Pradesh. Noticeable decadal variation is also observed in the frequency, spatial coverage and area of maximum frequency in the HW/SHW days. Significant increasing trends in the HW days were observed in many stations from CHZ.**

- (d) **Abnormal temperature events can impose severe physiological stress on the human body as the body operates best within a fairly normal temperature range. There is a marked relationship between human mortality and thermal stress. During unusually hot episodes, deaths from different causes can rise significantly with the elderly at greater risk than others. India has experienced manifold increase in the human deaths during various heat waves of years like 1971, 1987, 1997, 2001, 2002, 2013 & 2015. Recent years (2001-2015) have registered the highest number of deaths due to heat wave events compared to previous 3 decades.**
- (e) **As an adaptive measure, IMD in collaboration with local health departments have started heat action plan in many parts of the country to forewarn the heat waves and advising action to be taken during these occasions, including Ahmadabad heat action plan operated since 2013.**

The Heat Action Plan is a comprehensive early warning system and preparedness plan for extreme heat events. The Plan presents immediate and longer-term actions to increase preparedness, information-sharing, and response coordination to reduce the health impacts of extreme heat on vulnerable populations. The main objectives of the Heat Action Plan are Building Public Awareness and Community Outreach, Utilizing an Early Warning System and Inter-Agency Coordination, Capacity Building Among Health Care Professionals and Reducing Heat Exposure and Promoting Adaptive Measures.

Annexure

State wise statistics for the year 2017 and 2018 for Deaths due to Heat wave according to reports received

Deaths due to Heat wave during the year 2017	
State	No. of Deaths
Andhra Pradesh	236
Jharkhand	4
Maharashtra	16
Odisha	17
Telangana	100
West Bengal	2
Total	375

Deaths due to Heat wave during the year 2018	
State	No. of Deaths
Maharashtra	9
U.P.	9
Jharkhand	2
Total	20