

# HEAT AND HEALTH ACTION PLAN – SURAT (Executive Report)



Urban Health And Climate Resilience Centre, Surat

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## **Introduction:**

Urban health is the recent agenda in India. While it's in developmental phase need to consider climate change in urban health planning have strongly emerged. Due to its location, socio demographic profile, industrialisation, floods and climate events Surat city is vulnerable to climate change.

Urban health and Climate resilience centre is the first of its kind centre in India developed under seed funding support of Rockefeller foundation under ACCCRN project. UHCRC is executed by Health Department of Surat Municipal Corporation (SMC) and is governed by Surat Climate Change Trust (SCCT).

Rising temperature is almost the universal phenomena and scientists are researching and reporting its impact on health, development and productivity. "Amdavad heat action plan 2014" is the first plan in Asia and has drawn attention of all the cities for action. Every city is different and such initiative of one city is a guide for other cities. Amdavad is in arid zone while Surat city is in semi arid zone. Major difference of weather of Amdavad and Surat is in extreme temperature level, its duration and days, humidity and sea breeze. Surat analysis of 2010 shows 224 additional all cause deaths in summer.

UHCRC initiated research on Heat and Health in coastal city Surat in 2013 and has now prepared evidence based "Heat and health Action Plan – Surat (HHAP-S)" the first coastal city plan in India. Phase I of the HHAP-s is being piloted in 2016 summer.

## **Surat fact sheet**

- Surat is a coastal, industrialised and one of the most rapidly growing city with the highest migration rate.
- Public transport in Surat is less developed. Surat has highest number of per capita petrol vehicles in Gujarat contributing to carbon emission and heating.
- The city is influenced by a global rise in temperature.

## **Heat and Health Research, Surat:**

### **Process:**

- ✓ Analysis of the city climate (Temperature and humidity ) trend of last 30 years
- ✓ Analysis of the intra city (Spatial) climate trend 2014-2015
- ✓ Study of intra domestic environment and contributors of comfort zone (2013-2014)
- ✓ Analysis of mortality and climate trend (2001-2012)
- ✓ Study of comfort and morbidity experiences and actions of high risk groups (2014)
- ✓ Study of doctors experiences and practices with respect to heat related sickness (2014)
- ✓ Interactions with community to study heat experiences, understanding and actions (2014)

- ✓ Group interaction with Municipal corporation stakeholders for their experience and suggestions for heat action (2014)

**Salient Observations:**

**Climate**

- ✓ Surat has observed 0.7°C rise in average temperature in last 30 years
- ✓ Maximum temperature recorded during summer = 44.44°C in 2002
- ✓ Minimum highest temperature reported during summer=29.7°C in 2010
- ✓ Minimum temperature reported during summer = 9.3°C in 2012
- ✓ Rise in humidity in last 30 years = 5.5% (54.9% to 60.4%)
- ✓ HI = 94 (highest recorded) with an average of 52.75±7.61 in 2010
- ✓ Analysis of the maximum temperature of five weather stations revealed that the lowest maximum temperature recorded at five stations was 39.1°C (zone with river) and the highest maximum temperature was 43°C (industrial zone).
- ✓ There were more frequent maximum temperature spikes identified in the last decade (2005-2014) as compared to previous two decades (1985-1994 and 1995-2004).

**Health:**

- ✓ A total of 36,167 deaths for 961 summer days (2001-2012) were analyzed. Mean daily mortality was estimated at 37.6±9.4 for the study period. There is an increase of 11% mortality when temperature crossed 40°C.
- ✓ There is an increase of 3 (9%) deaths per day during danger (41-54°C) level heat risk days and 6 (18%) deaths per day during high risk heat days (>54°C - extreme danger) respectively. The effect of extreme heat on mortality is at peak at day-2 of the maximum temperature.

**Heat and Health Action Plan – Surat:**

	<b>Intervention</b>	<b>Partnership / Facilitation</b>
<b>Pilot I (2016)</b>		
<b>Pre heat season (January through March)</b>	<ul style="list-style-type: none"> <li>▪ Submission of Heat and health Action plan –Surat</li> <li>▪ Appointment of Nodal officer HHAP-S</li> <li>▪ Planning meeting at SMIMER Hospital</li> <li>▪ Sensitisation workshops with different departments of SMIMER and Nursing staff</li> <li>▪ Sensitisation workshops of Medical Officers of UPHCs.</li> <li>▪ Sensitisation seminar of members of practitioners associations</li> </ul>	Health department of SMC + SMIMER + Maskati + UHCRC
<b>Pilot Heat season (March to June)</b>	<ul style="list-style-type: none"> <li>▪ Installing data loggers in the ward for comfort zone study</li> <li>▪ Designing surveillance system</li> <li>▪ Initiating forecast system</li> <li>▪ Designing speciality specific SOPs of case management</li> <li>▪ Recording heat illness morbidity</li> </ul>	Health department of SMC + SMIMER + Maskati + UHCRC
<b>Post Heat Season (July)</b>	<ul style="list-style-type: none"> <li>▪ Review of reporting and documentation of the surveillance of heat morbidity.</li> <li>▪ Prepare a report/document on the situation, process, output and outcome of that summer.</li> </ul>	Health department of SMC + SMIMER + Maskati UHCRC

	<ul style="list-style-type: none"> <li>▪ Evaluate the process of the Plan based on performance and revise accordingly.</li> <li>▪ Evaluate the reach and impact of the Plan and revise accordingly.</li> <li>▪ Post the revised Plan to the SMC for Pilot II</li> </ul>	
<b>Pilot –II (2017)</b>		
<b>Pre heat season (January through March)</b>	<ul style="list-style-type: none"> <li>▪ Organise a planning meeting of Steering Committee &amp; stakeholders.</li> <li>▪ Organise preparation of heat morbidity diagnostic &amp; management protocols / algorithm.</li> <li>▪ Organise preparation of IEC material, dissemination of articles for professionals through newsletters, news papers &amp; local channels.</li> <li>▪ Plan the logistics need for the year and procurement of the same.</li> </ul> <p>Organise training / reorientation programmes for</p> <ul style="list-style-type: none"> <li>▪ SMC medical officers</li> <li>▪ SMC hospital doctors</li> <li>▪ Outreach workers (ANM), Link workers, AWWs, MPHWs, Sanitary Inspectors, and Food Inspectors)</li> <li>▪ Community groups (school children, Sakhi mandals, vulnerable occupational groups, employees of vulnerable occupational groups, media, etc)</li> <li>▪ Organise workshops for private practitioners' associations</li> </ul>	Health Department of Surat Municipal Corporation + SMIMER + Maskati
	Preparation of DOs and DON'T and distribution through system	Health Department of Surat Municipal Corporation
	Awareness through Media	Health Department of Surat Municipal Corporation
	Promote green building technology (Terrace garden)	Planning Department of SMC
<b>Pilot Heat season (March to June)</b>	Activate a citywide heat alert local response when extreme heat events are forecast, by notifying officers in accordance with the Heat And Health Action Plan	SMC / Nodal Officer
	<ul style="list-style-type: none"> <li>▪ Shall remain in contact with major public and private hospitals for death registration of Heat exposure related mortality.</li> <li>▪ Monitor implementation of activities under the action plan and if needed, implement interim corrections / modifications.</li> </ul>	SMC / Nodal Officer

	<ul style="list-style-type: none"> <li>▪ Activate CCC (Community Cooling Centres) such as temples, public buildings, malls, during a heat alert and/or SMC-run temporary night shelters for those without access to water and/or electricity.</li> <li>▪ Identify and set up public displays of Temperature, Heat Index, and forecasts.</li> <li>▪ Communicate the local utility protocol to prioritize maintaining power to critical facilities (such as hospitals and UHCs).</li> <li>▪ Notify the Steering Committee and relevant agencies when the heat alert is over.</li> </ul>	
	Ensure access to potable drinking water	SMC
	Establishment of sheds and shelters for public especially at traffic signals	SMC
	Press release on alert system as per IMD forecast	Nodal Officer
	All parks / gardens should be open for public places (Bus and railway station, etc)	SMC– Garden Department
<b>Post Heat Season (July)</b>	<ul style="list-style-type: none"> <li>▪ Review of reporting and documentation of the surveillance of heat morbidity.</li> <li>▪ Prepare a report/document on the situation, process, output and outcome of that summer.</li> <li>▪ Evaluate the process of the Plan based on performance and revise accordingly.</li> <li>▪ Evaluate the reach and impact of the Plan and revise accordingly.</li> <li>▪ Post the revised Plan to the SMC website by end of September.</li> <li>▪ Organize an annual Heat Action Plan evaluation meeting with the Steering Committee and relevant stakeholders.</li> </ul>	SMC / Nodal Officer
	Analysis of illness and death records	SMC Health Department
	Analysis of daily recorded temperature and humidity	SMC / Nodal Officer
	Assess the primary and secondary reasons for deaths	SMC Health Department
	Orientation to health staff on lesson learnt	SMC Health Department

Note: 2018 summer shall be a phase of Project to Program with all three phase as implemented and revised in 2017.

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