

Section 13 – Extreme Heat

Hazard Profile	1
Location	2
Spatial Extent	2
Historical Occurrences	2
Probability of Future Events	4
Vulnerability Assessment.....	4
Impact	4

Hazard Profile

Severe, excessive summer heat is characterized by a combination of a very high temperatures and exceptionally humid conditions. When persisting over a period of time, it is called a heat wave. Many areas of the country, especially the Lower Colorado River Basin, are susceptible to heat waves.

The major human risks associated with severe summer heat include heatstroke, heat exhaustion, and heat cramps. Most at risk are people who work outdoors, the elderly, children, and people in poor physical health. The effects of severe summer heat are always more pronounced in urbanized areas than in rural areas. Within urbanized areas, the problem is exacerbated by what is known as the heat island effect, in which the concrete and metal infrastructure absorb radiant heat energy from the sun during the day and radiate that heat energy during the night. This cyclical process essentially traps the heat in the urbanized area and makes it as much as 10 degrees warmer than the surrounding area.

During summer months, the TCRFC Region is frequently affected by severe heat hazards. Persistent domes of high pressure establish themselves, which set up hot and dry conditions. This high pressure prevents other weather features such as cool fronts or rain events from moving into the area and providing necessary relief. Daily high temperatures range into the upper 90’s and low 100’s. When combined with moderate to high relative humidity levels, which are especially prevalent in counties such as Matagorda and Wharton, the heat index moves into dangerous levels, and a heat index of 105 degrees is considered the level where many people begin to experience extreme discomfort or physical distress.



Severe summer heat is an invisible killer. Although a heat wave does not happen with the spectacle of other hazards such as tornadoes and floods, the National Center for Environmental Health reports that, from 1979 to 1999, excessive heat exposure caused 8,015 deaths in the United States. In other words, during this period, more people in the U.S. died from severe summer heat than from hurricanes, lightning, tornadoes, floods and earthquakes combined.

Location

There is no distinct geographic boundary to excessive summer heat. Excessive summer heat can occur in every area of the TCRFC Region.

Spatial Extent

The spatial extent of excessive summer heat is “Limited,” expected to affect 10% to 25% of property in the region.

Historical Occurrences

In other parts of the country and the world, severe summer heat hazards can have devastating consequences. For instance, in 1995 a two-week-long heat wave hit Chicago, and the heat index peaked at 119 degrees Fahrenheit. There were 465 deaths directly attributable to the heat wave, and more than half of the victims were 75 years of age or older.

During the summer of 2003, a heat wave scorched Europe and killed more than 19,000 people, according to official estimates by the Associated Press. Throughout that July and August, the heat wave set new records across Europe. The heat wave caused billions of dollars in property damage due to crop failures, livestock failures, wildfires and melting Alpine glaciers. But, by far, the greatest losses were human lives.

According to the National Climatic Data Center, a strong heat wave effected Texas in the summer of 1999 and 2000. Colorado, Matagorda and Wharton in addition to Lampasas and Mills counties suffered in terms of injuries and deaths (See Table 13-1). Travis and Williamson counties are the only other two counties to have experienced a recorded extreme heat event. Except for one case, all of the victims of extreme heat in Travis and Williamson counties were either elderly or under three years of age. In total, 100 people in the TCRFC area



have lost their lives due to extreme heat and heat waves during the summer months. This underscores the importance of increased public awareness regarding the danger of extreme heat.

**Table 13-1. Historical Excessive Heat Events
in the TCRFC¹**

County	Event Date	Deaths	Injuries	Property Damage	Crop Damage
Colorado/ Matagorda/ Wharton	7/21/95	2	200	0	0
	6/26/99	3	0	0	0
	8/1/99	6	0	0	0
	7/6/00	19	0	0	0
	8/29/00	3	0	0	0
	9/1/00	5	0	0	0
Lampasas/Mills	7/1/98	32	0	0	0
	8/1/99	3	0	0	0
	7/1/00	8	0	0	0
	8/1/00	5	0	0	0
	9/1/00	5	0	0	0
Travis	7/29/99	1	0	0	0
	8/14/99	1	0	0	0
	8/16/99	1	0	0	0
	7/4/00	1	0	0	0
	7/5/00	1	0	0	0
	7/18/00	1	0	0	0
	7/23/00	2	0	0	0
Williamson	7/25/00	1	0	0	0

¹ The totals for deaths and injuries in Table 13-1 include additional counties affected in the disaster area outside of the TCRFC. Therefore totals are greater than in the County alone.

County	Event Date	Deaths	Injuries	Property Damage	Crop Damage
Totals		100	200	0	0

Probability of Future Events

The likelihood or future probability of occurrence of excessive summer heat in the TCRFC is “Possible”, with an event in the next four to five years. The TCRFC area is currently experiencing a period of extreme drought and above-average temperatures for 2009, with temperatures 10 degrees above normal for the month of June. Multiple counties throughout the region have issued burn bans to prevent wildfire due to the extreme heat and dry conditions.

Vulnerability Assessment

There is no defined geographic boundary for excessive summer heat events. All population, buildings, critical facilities, infrastructure, lifelines, and hazardous material facilities are considered exposed to the excessive summer heat hazard and could be potentially impacted. As a result, excessive summer heat deserves mitigation consideration by the participating jurisdictions.

It is clear that the TCRFC has been and will continue to be affected by extreme summer heat. Based on a qualitative analysis of the impacts that a severe summer heat hazard would have on social, economic, and environmental components of the region, the risk of a severe summer heat hazard is sufficient enough to merit mitigation consideration.

Impact

The potential impact of excessive summer heat is “Minor” resulting in few, if any, injuries. There is only minor property damage and minimal disruption to the quality of life. Any shutdown of facilities is temporary.