



U.S. Chemical Safety and Hazardous Investigation Board

Organic Peroxide Decomposition, Release, and Fire at Arkema Crosby Following Hurricane Harvey Flooding

Fact Sheet

Harvey was the very definition of an Act of God.

Echoing the National Hurricane Center's Post-Harvey report and statements made by the U.S. Department of Justice on behalf of the U.S. Army Corps of Engineers, the U.S. Chemical Safety and Hazardous Investigation Board (CSB) has concluded that Hurricane Harvey was the most impactful tropical cyclone rainfall event in U.S. history. It is the very apotheosis of an Act of God, and greatly exceeded the potential 500 year flooding event.

Here are some key quotes and statements derived from the CSB's report:

"Hurricane Harvey turned out to be the most significant tropical cyclone rainfall event and the second most costly hurricane in U.S. history, after Hurricane Katrina." *Report, Paragraph 1*

"Over the course of the storm, Hurricane Harvey killed 68 people and flooded over 300,000 structures, forcing roughly 40,000 people to evacuate their homes." *Report, Paragraph 1*

"Flooding from Hurricane Harvey extended above the 500-year flood plain elevation." *Report, Paragraph 34*

"Hurricane Harvey was the strongest hurricane to strike Texas since 1961 and the first Category 4 hurricane to make landfall in the United States since 2004. The Harris County Flood Control District reported that about one trillion gallons of water fell on Harris County as a result of Hurricane Harvey rainfall over four days. The rain from Harvey could cover the county's 1,800 square miles with 33 inches of water. The storm flooded more than 136,000 structures." *Report, Paragraph 145*

"During Hurricane Harvey, gauge station 1740 recorded 38 inches of rain raising the water level in Cedar Bayou to nearly 59 feet, the highest water level measured at this location since the gauge station was installed in 1984. This amount of rain is the equivalent of 80 percent of the average annual rainfall for the Houston area, delivered over the course of just a few days. On August 27, 2017, this gauge recorded about 21.5 inches of rainfall, exceeding both the 12-hour and 24-hour 500-year rainfall criteria for Harris County by more than two inches." *Report, Paragraph 151*

“For the Arkema Crosby facility, which is in the Cedar Bayou region of Harris County, a 0.2 percent (500-year) is 19.3 inches in 24 hours, 20.7 inches in two days, and 22.3 inches in four days. As shown in Figure 49, Hurricane Harvey rainfall exceeded all of these benchmarks for a 500-year rainfall event.” *Report, Paragraph 151, Footnote b*

“The 59-foot Cedar Bayou water level exceeded the nearly 57-foot predicted elevation for 0.2-percent flood frequency. As a result, the flooding at the Arkema Crosby facility following Hurricane Harvey was greater than that of a 500-year flooding event.” *Report, Paragraph 152*

“The Harris County Flood Control District maintains historical records for each gauge station. Before Hurricane Harvey, the previous high-water mark for Cedar Bayou at gauge station 1740 was set in 1994 with a water elevation of about 56 feet.” *Report, Paragraph 153. Table 4* indicates that on August 27, 2017, 59.00 feet was reported.

“In addition, NOAA rainfall estimates show the rainfall during Harvey had less than a 1-in-1,000 year likelihood of occurring, which would be a “rare” frequency event in the Arkema PHA policy.” *Report, Paragraph 338*