

From 2005-2010, oil refineries in Louisiana averaged more than nine accidents per week. Refineries are required by law to report these accidents to the Louisiana Department of Environmental Quality when permitted emissions are exceeded. There are many causes for these accidents, including equipment failure, human error and process upset. This report looks closely at accidents caused by storms, which includes inclement weather such as rain, wind, lightning and hurricanes.

Storms are the largest cause of refinery accident pollution in Louisiana.

Louisiana's average yearly rainfall: 60 inches. Louisiana is hit by hurricanes every 2-3 years.

Refineries often refer to accidents during storms as “unusual” or “unforeseen” events, but as statistics and experience illustrate, extreme weather is an undeniable reality of Louisiana life. Refinery reports show that while storms were the cause of only 6% (157) of oil refinery accidents, they ultimately accounted for 26% (5,829,446 pounds) of air pollution and 65% (15,285,717 gallons) of liquid pollution emissions – more than any other accident cause. Storms make up a small number of accidents, but the large amount of pollution they release indicates that storm-related accidents are particularly dangerous and place Louisiana residents in toxic environments during hurricane season.

Storm accidents are often preventable.

Largest storm accident: 11,655,000 gallons of wastewater released into Lake Borgne by Chalmette Refining prior to Hurricane Gustav in 2008.

Cause: Insufficient wastewater capacity

Storm accidents occur as a result of any weather-related complication. From hurricanes to rain to lightning, the refining industry has difficulty safely managing its operations in weather that is typical for Louisiana. The most frequent cause of accidents during storms was during shutdown and start-up procedures, totaling 2,634,105 pounds of air pollution. Storm and wastewater capacity overflow was the second most common cause, totaling 11,656,664 gallons of pollution. Other accidents were caused by power failure, equipment failure and human error. Increasing wastewater capacity, installing back-up generators and following proper start-up and shutdown procedures could have prevented some of the refineries' worst accidents.

Refinery accidents during hurricanes put workers, communities and the environment at high risk.

Longest storm accident: 1 million gallons of oil spilled into the surrounding neighborhood and 18,734 pounds of air pollution released by Murphy Oil following Hurricane Katrina in 2005.

Duration of Incident: 63 days. Area impacted: More than one square mile and more than 1,800 homes.



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Accidents that occurred during hurricanes released significantly more pollution than other weather-related accidents. Hurricane-related accidents are responsible for 59% (3,449,711 pounds) of all storm-related air pollution and 85% (13,013,143 gallons) of water and ground pollution. Murphy Oil did not follow hurricane preparedness guidelines to fill tanks so they would not slide off the foundations in floodwaters. ExxonMobil in Baton Rouge did not shut down during Hurricane Gustav, endangering not only surrounding residents but also the workers inside the plant.

Chemicals Released during Storm Accidents	Quantity Released between 2005-2010	Health Effects
Benzene	27,378 pounds	Known carcinogen
Carbon Monoxide	1,306,009 pounds	Reduces oxygen delivery to the body's organs
Volatile Organic Compounds	706,335 pounds	Known carcinogen
Sulfur Dioxide	2,574,010 pounds	Known trigger of asthma attacks and other respiratory illnesses

Refineries must take action now to reduce accidents during storms.

Refinery officials should be doing everything they can to minimize complications during hurricanes, this includes following hurricane preparedness procedures and shutting down and evacuating facilities prior to landfall. Through our research we have found areas of concern that need to be addressed immediately.

Plan as if a hurricane will hit your refinery. The petrochemical industry must revamp and follow its hurricane procedures. There have been too many major accidents in the past six years that could have been avoided through proper preventive measures. From the 11.6 million gallons released by Chalmette prior to Gustav, to the 1.2 million pounds sent into the air by ExxonMobil in Gustav to the million-gallon oil spill caused by Murphy Oil not following its hurricane plan during Katrina – these accidents are unacceptable and demonstrate that this industry has little concern for human health and safety.

Planned shutdowns minimize risk to workers and residents as well as limit emissions. A planned shutdown of the entire refinery should be in effect within no less than 12 hours of a hurricane landfall. This should be mandatory and not left to the discretion of the companies. A well-sequenced shutdown of the entire facility should result in little to no emissions. ExxonMobil did not shutdown even as the eye of Hurricane Gustav passed over the plant, resulting in more than 1.2 million pounds of pollution as well as endangering worker and resident health and safety. Refineries should avoid last minute shutdowns at all cost. Last minute shutdowns are common during hurricanes because industry does not want to lose profit.



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Power failure is inevitable during storms. Plan for it. From 2005-2010, refineries released 204,121 pounds of pollution during nine accidents caused by complications from power failure. For example, at Motiva's Norco refinery on July 5, 2005, during Tropical Storm Cindy, a power outage caused the shutdown of two process units. This accident released 83,002 pounds of air pollution. Power failure is a known risk during storms. Refineries need to have enough backup power supply so they can shut down the plant safely.

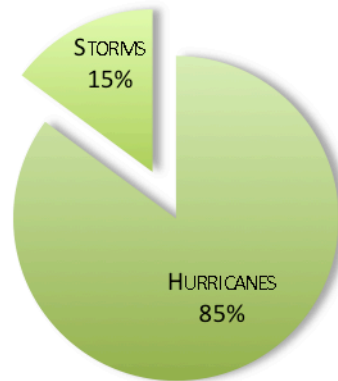
Increase capability to handle rainfall. There were 45 accidents between 2005-2010 caused by an inability to handle storm and wastewater. Almost half of these accidents, 21 out of 45, did not provide any information on the quantities of pollution released. This includes the 11.6 million-gallon release from Chalmette Refining during Gustav, but 35 of these accidents did not involve hurricanes and were caused by heavy rain. One accident at CITGO Petroleum in Lake Charles on June 18, 2006, was caused by heavy rains that flooded equipment and overwhelmed the wastewater treatment system and storm tanks. This accident caused a 2,226,000-gallon oil spill into the Calcasieu River and released 368,645 pounds of pollutants into the air. Any release of oil or chemical compounds into nearby waters is unacceptable. Refineries should be equipped with the storm and wastewater capacity to handle a Louisiana rainstorm.

See graphs on next page.

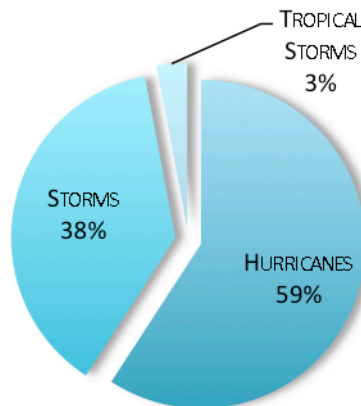


Storm-Related Pollution by Category

WATER/GROUND POLLUTION



AIR POLLUTION



Storm-Related Pollution by Year

