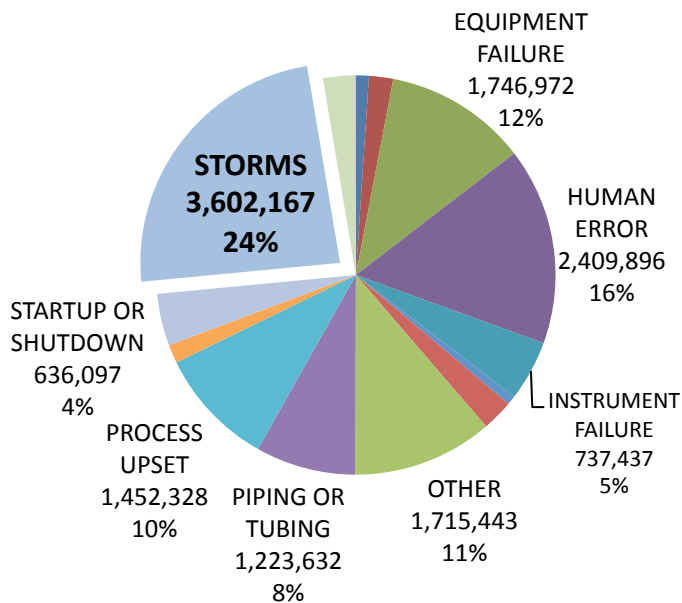


Refinery Accidents and Storms

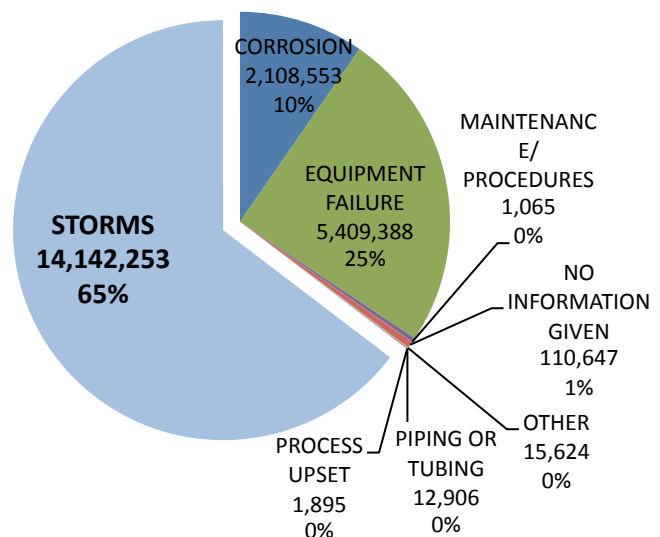
Louisiana refineries are required by law to report their accidents or “unauthorized discharges” to the Louisiana Department of Environmental Quality. An analysis of these reports by the Louisiana Bucket Brigade has found that ten of the largest refineries in the state have a significant problem with their operations during storms; almost a quarter of all of their accidents from 2005-2008 were storm related. Storms include rainfall, wind and lightning as well as hurricanes.

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

**Air Pollution by Causal Factor
(LBS) 2005-2008**



**Water Pollution by Causal Factor
(GAL) 2005-2008**



The industry reports to the LDEQ show that storms were the cause of 5% (or 110 out of 2116) of oil refinery accidents, but accounted for 24% (3,602,167 pounds) of air pollution and 64% (14,142,253 gallons) of water pollution emissions.

What is causing these accidents?

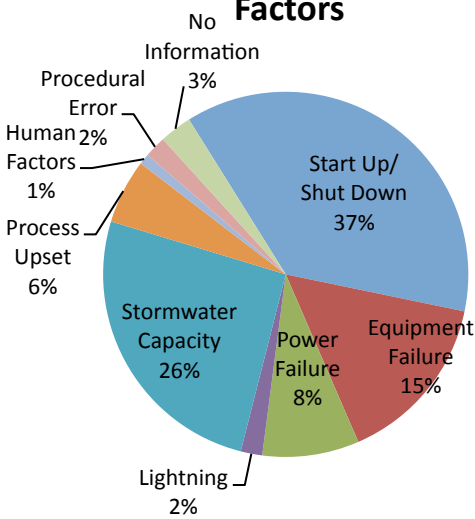
These accidents occur as a result of any weather related complication. From hurricanes to rain to lightning, the refining industry as whole has difficulty safely managing its operations in weather that is typical for Louisiana.



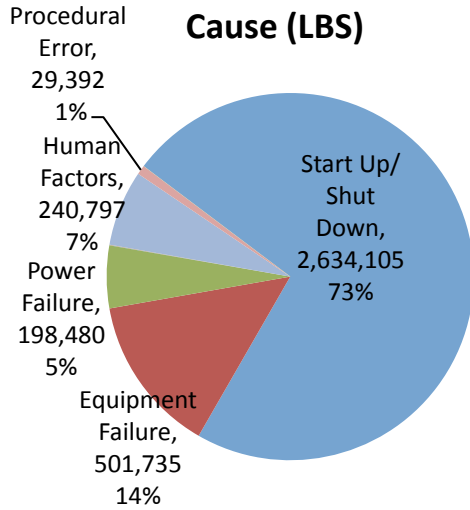
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The most frequent cause of accidents during storms was improper start up and shut down procedures, totaling 39 accidents or 37% of all storm accidents and 2,634,105 lbs of air pollution. Storm and wastewater capacity overflow was the second most common cause totaling 27 accidents and 11.6 million gallons of pollution. Other weather related accidents were caused by power failure, equipment failure and human error.

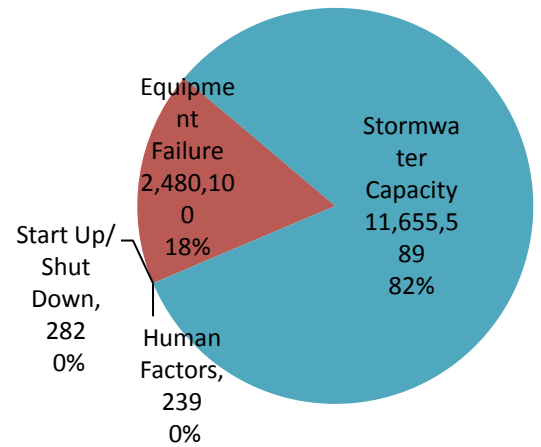
Storm Accidents by Causal Factors



Storm Accident Air Pollution by Cause (LBS)



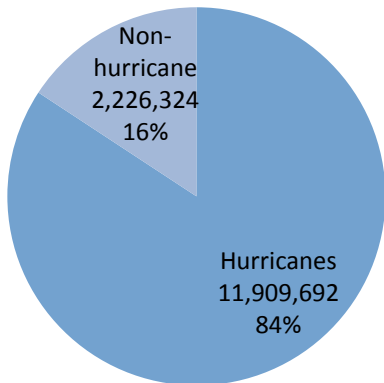
Storm Accident Liquid Pollution by Cause (GAL)



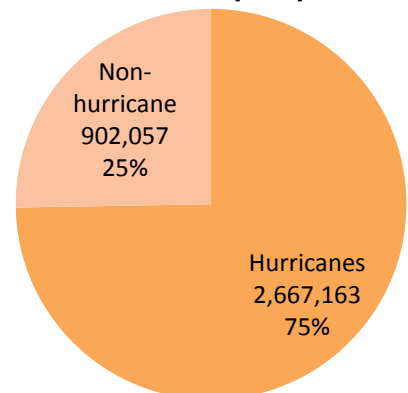
Refinery accidents during hurricanes cause significant pollution.

Accidents that occurred during hurricanes released significantly more pollution than other weather related accidents. Hurricane related accidents are responsible for 75% (2,667,163 pounds) of all weather related air pollution and 84% (11,909,692 gallons) of water pollution.

Storm Accident Liquid Pollution 2005-2008 (GAL)



Storm Accident Air Pollution 2005-2008 (LBS)





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Refineries are not prepared to handle storms.

Industry reports show that many refineries are not sufficiently prepared to handle storms.

For example, in 2008 ExxonMobil Baton Rouge Refinery did not shut down the facility for Hurricane Gustav until the storm's winds knocked down a cooling tower. This caused several units to be rapidly shutdown and the complications from this emergency resulted in five accidents over the course of three days that released 1.2 million pounds of pollution to the air endangering both workers and the surrounding community.

"I will never forget the pollution during Gustav. All the power was out in the neighborhood; it was so hot we could not be inside the house for weeks. We had to sit outside all day and all night breathing in some of worst pollution I have ever experienced. On top of the stress from the hurricane, we were all sick from chemical exposure." Ms. Seabell Thomas, community leader of Community Empowerment for Change, lives on the fenceline of ExxonMobil's Baton Rouge facility.

A federal investigation found that by not properly following their hurricane procedures ExxonMobil wrongfully endangered its workers. For this violation they were fined only \$5,000.¹ OSHA later waived that fee. ExxonMobil is a reminder of why sufficient time for shut down and evacuation of oil refineries needs to be more strictly enforced.

Chalmette Refining, LLC in St. Bernard Parish released 11.6 million gallons of wastewater from their treatment plant into Lake Borgne during their shutdown in anticipation for Hurricane Gustav on August 30, 2008. In addition, the shutdown process released 673,700 pounds of pollutants into the air.

At CITGO Petroleum in Lake Charles on June 19th, 2006, rainfall runoff exceeded the available capacity of the wastewater treatment system's storm water tanks and over two million gallons of oil were spilled into the Calcasieu Ship Channel. This spill caused the closure of many local waterways, affecting thousands of people who rely on the water for their livelihoods. In reviewing this case, Judge Canady found that CITGO under built the wastewater treatment facility that caused the spill. Judge Canady also said that CITGO cognitantly misinformed government agencies of the status and capabilities of its wastewater treatment unit.

Recommendations

Hire more union workers: Refinery hiring of union workers is in decline in favor of cheaper part time workers. Also of concern is that refineries do not add staff during emergencies. More union workers would add expertise to refinery operations and improve storm preparedness, including

¹ Daker, S. (2010, March 20). Probe finds Exxon exposed workers to hurricane hazards. *The Wall Street Journal*, Retrieved from <http://online.wsj.com/article/SB123758642112499625.html>



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the start up and shut down processes. Starting up a unit is the most dangerous time in a facility period. This is when the most manpower is needed and the workers need to be well trained. The worrisome trend of downsizing and eliminating union positions has serious implications for refinery performance during storms.

Improve storm preparedness: The petrochemical industry must reassess and follow its hurricane preparedness procedures. There have been too many accidents in the last decade that might have been avoided. These include the 11.6 million gallons released by Chalmette Refining in advance of Hurricane Gustav, the 1.2 million pounds sent into the air by ExxonMobil in Gustav, Murphy Oil's million gallon oil spill during Hurricane Katrina and the Orion (now Valero) tank fire in 2001 that was called "the largest tank fire in history" by the refinery manager.

Make start up and shut down of the plants more efficient: Startup and shutdown in preparation for storms is the number one cause of weather related accidents and is responsible for more air pollution than any other accident cause. Accidents during start up and shut down accounted for 39 accidents, or 37% of all storm accidents. These accidents emitted more than 2.6 million pounds of pollution. Refineries should allow enough time for efficient shut down and start up of units during storms. Refineries should also invest in pollution control technologies that capture and reuse hazardous pollutants instead of releasing them into the air.

Improve power sources, including back up power: Complications from power failure caused nine accidents that resulted in 198,480 pounds of pollution. For example, at Motiva Norco on 7/5/2005 during Tropical Storm Cindy, a power outage caused a total loss of electrical instruments, air compressors and the loss of several steam boilers that caused the shutdown of the HCU and RCCU process units (LDEQ #80320). This accident released 81, 9621 pounds of air pollution. Reliable backup power at these facilities should be the standard.

Increased storm water and wastewater capacity: There were 27 accidents caused by an inability to handle storm and wastewater. Refineries did not provide any information for the quantities released in over half of these accidents. Refineries should be equipped with the storm and wastewater capacity to handle a typical Louisiana rainstorm.