

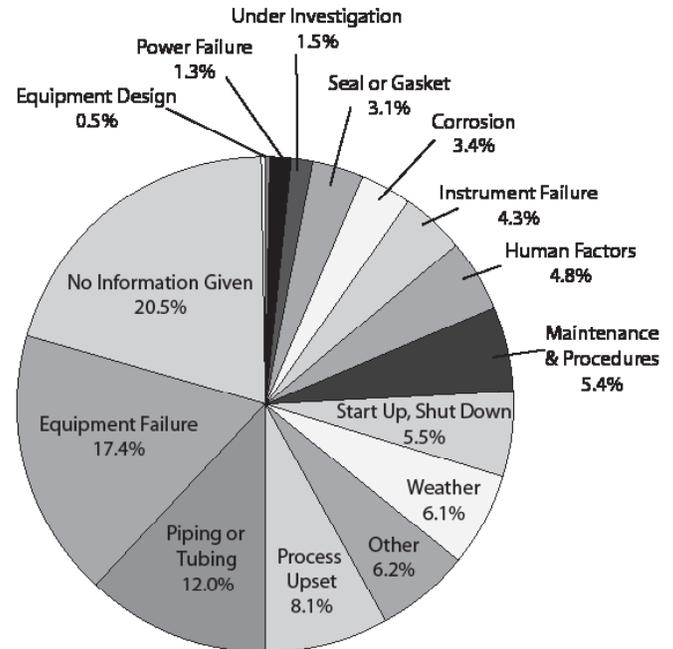
COMMON GROUND IV

WHY COOPERATION TO REDUCE ACCIDENTS AT LOUISIANA REFINERIES IS NEEDED NOW



Neighborhoods on the fence line of refineries throughout Louisiana face exposure to harmful chemicals on a daily basis. The chronic problems in refinery operations impact the neighboring community, the workers, and all of us in Louisiana.

Common Ground is an analysis of refineries' reports to the state. The goal is to identify trends of problems so that accidents can be reduced. With over 200,000 people living within 2 miles of a refinery in Louisiana, there is a clear need to reduce accidents and eliminate exposure to hazardous chemicals.⁴



Refinery Accident Causes 2005-2011
(by number of accidents)

KEY FINDINGS

- 5+ accidents per week in 2011. 301 total reported accidents, over 1 million pounds of air pollution, and over 1.3 million gallons of soil and water pollution at Louisiana refineries.
- ExxonMobil reported the most accidents of any company. 138 accidents were reported from their two refineries in Chalmette and Baton Rouge in 2011, resulting in over 428,000 pounds and over 1,274,000 gallons of pollution.
- EPA's Inspector General found that Louisiana Department Environmental Quality had "poor performance."³ The LDEQ failed to perform adequate inspections according to a review released in December of 2011.
- Inadequate reporting. Over 20% of reports across all refineries contain no information about the accident, what was released, how much, what caused the accident and what will be done to prevent it in the future.

RECOMMENDATIONS

REFINERIES

- Hire more full-time workers. Contractors may be temporary, receive less training, and can be terminated easily.
- Acknowledge accidents and collaborate to prevent future accidents.
- Comply with the Occupational Safety and Health Administration's (OSHA) Process Safety Management standard. This standard guides industry to safely manage transportation, processing and use of highly hazardous chemicals.
- Improve accuracy and timeliness of reporting by using root cause analysis for all accidents and employing continuous emissions monitoring technology to calculate (not estimate) emissions.
- Improve preparedness for rain, wind, lightning, tropical storms, and hurricanes. Storms are a perpetual risk. Refineries' use of "act of God" to explain their accidents is an excuse for poor planning and lack of a root cause analysis.

GOVERNMENT

- Incorporate community and worker input in inspections, investigations, and negotiations with oil industry.
- Enforce regulations. This will create jobs and incentivize preventative maintenance.
- Include workers and residents in local emergency planning commissions and convene these meetings.
- Increase enforcement in Louisiana, including meaningful fines for lawbreakers.
- Improve emergency preparedness by conducting unannounced inspections and reviewing storm preparedness plans.

COMMUNITY VOICES

“My children are frequently sick. As a matter of fact, I just got my youngest daughter from the eye doctor this morning where she is constantly keeping some type of dry eye infection. The doctors think it comes from the atmosphere we live in.”

“[In Standard Heights] the spirit is broken. A lot of people are just really angry.”

“We really need to try to take some action and try to understand, ‘what is it we can do together?’ As a community, we should try to pull everyone on together, so that if something were to happen again, we can try to have some things in order.”

“We see lots of children throughout the neighborhood that suffer from upper respiratory infection repeatedly. The constant nose running, the constant sneezing, the headaches, and sometimes vomiting.”



Tonga Nolan
Standard Heights
Community Association

“The doctors think it comes from the atmosphere we live in.”
-Tonga Nolan, Standard Heights Community Organization

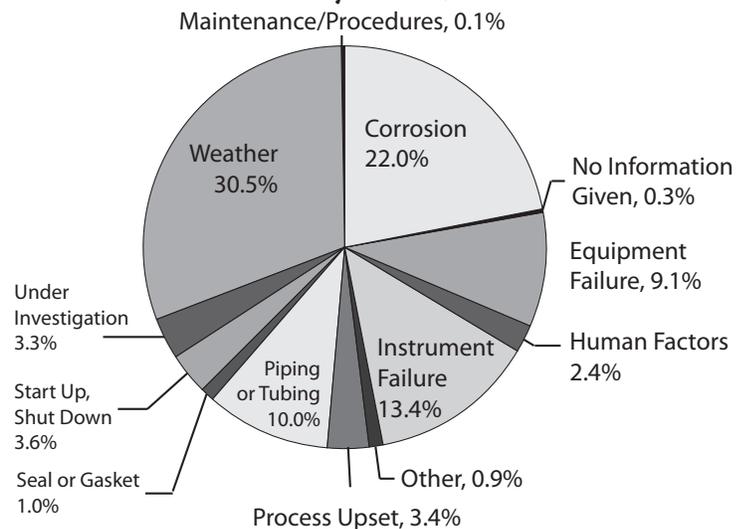
EXXONMOBIL, BATON ROUGE

According to ExxonMobil's reports, the following units had the most problems from 2005-2011:

- **Cooling Towers:** 38 total accidents released 183,805 lbs. and 9 gallons in 2005 to 2011. Several units had repeated accidents. Tower 3 exchangers had 3 accidents from 2006-2011. Heat exchangers experienced 15 accidents from 2006-2011. Pumps had 4 accidents from 2005-2011.
- **Coke Plant:** 18 accidents released 158,808 lbs. in 2005-2008.
- **Sulfur Plant:** 16 accidents released 382,037 lbs. in 2005-2011.
- **Light Ends Unit:** 15 accidents released 167,741 lbs. and 500 gallons of pollution in 2005-2011. Compressor GLA-3X experienced 3 accidents in 2005-2011, and released 16,375 lbs.
- **Fluid Catalytic Cracking Unit:** 9 accidents released 31,282 lbs. in 2005-2009.
- **Depropanizer:** 8 accidents released 135,106 lbs. in 2005-2011.
- **Refinery Gas Compression Unit:** 8 accidents in 2005-2010 released 8309 lbs.
- **Furnace 201 and 301:** 7 accidents in 2005-2011 released 149,986 lbs.
- **Hydrocracker Unit:** 5 accidents released 10,420 lbs. in 2006-2010.
- **Tanks:** 5 total accidents released 6,021 lbs. from 2009-2011. Tank 100 had 3 accidents in 2009-2010 that released 3,212 lbs.
- **Wet Gas Scrubber:** 4 accidents from 2005-2009 released 159,805 lbs.

*lbs. or gallons refer to the weight or volume of all pollutants released per unit

Air Pollution by Cause, 2005-2011



Pollution from 2005-2011

- 4.3 million+ pounds
- 45,000+ gallons
- 793 accidents

“When I found out that Tank 175 was leaking hydrogen sulfuric acid [hydrogen sulfide], I also learned that the refinery doesn’t regularly check for maintenance and they don’t invest in new equipment. I submitted a citizen’s complaint about the tank, and two months later I learned that a valve associated with that the same tank had failed! I thought they had repaired the tank and all of its parts to the fullest extent but that’s not the case. They patch up the problem, but they don’t fix it. Sure the refineries give \$2000 a year for all of our problems, but that could never make up how their actions have affected my family’s lifestyle.



Velma White
Residents for Air Neutralization

Trying to work with the refinery, and living with its consequences, is a nightmare. It’s bad we live in this environment; it’s scary. Every time something goes wrong, I think, *What can I do to protect myself, my family, and my friends?* The refinery representatives talk to you like you don’t know anything [and] say *look, we do this for you, we do that.* It’s terrible because they find ways to disqualify what they’re doing to the environment. As I keep working with the refinery and living with them, I think, *When am I going to wake up from this nightmare?* This year has been successful for reaching my neighbors because I distribute documents about refinery accidents that let community members read and figure out the

issues by themselves.”

Thanks to the hard work of Residents for Air Neutralization and their president Ms. Velma White, the EPA conducted a surprise inspection of Calumet Lubricants in August of 2011.

“There have been flares that lit up the night sky and blacked out the daylight as well.”

-R.J. Bowman, Residents for Air Neutralization

Pollution from 2005-2011

- 318,000+ pounds
- 104,000+ gallons
- 101 accidents

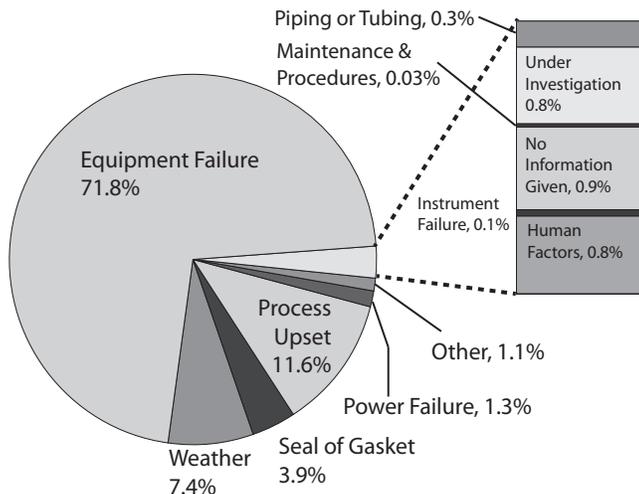
CALUMET LUBRICANTS 8, SHREVEPORT

According to Calumet Lubricant’s reports, the following units had the most problems from 2005-2011:

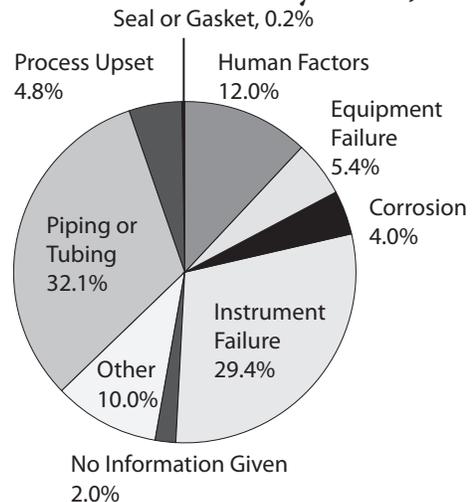
- **Tanks:** 31 total accidents, and 193,946 lbs. and 98,229 gallons released in 2005-2011. Tank 32 experienced two accidents, one in 2005 and one in 2008, and released 1,680 gallons.
- **Sulfur Recovery Unit:** 19 total accidents and 88,007 lbs. released from 2005-2011, typically going to Flare #3.
- **Vacuum Distillation Unit #4:** 5 accidents and 3,745 lbs. released from 2005-2008.
- **Hydrotreatment:** 4 total accidents and 424 lbs. from 2005-2011.
- **Gas Compressor:** 3 total accidents and 2,386 lbs. from 2008-2011.

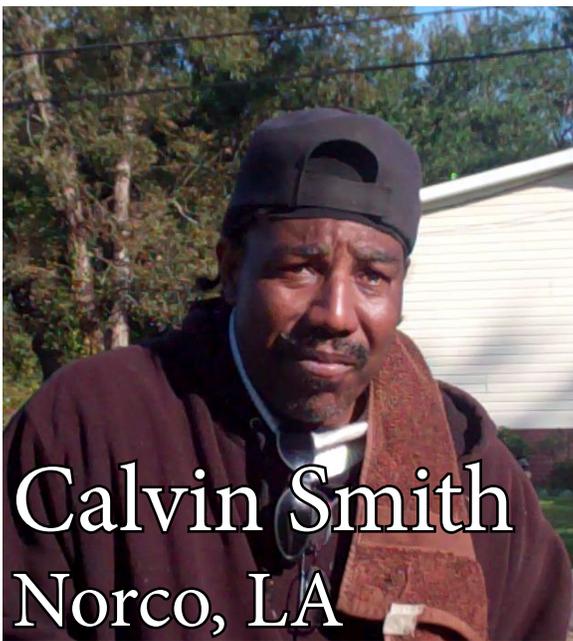
*lbs. or gallons refer to the weight or volume of all pollutants released per unit

Air Pollution by Cause, 2005-2011



Ground and Water Pollution by Cause, 2005-2011





“I think that they should have a better procedure about at least warning us and give us the option about evacuating. Sometimes things happen at the plant, and they don’t even tell us. That’s to keep it confidential so we won’t know anything about it, probably thinking we will have a class action suit. But a lot of people say, on the other side of the track are different races, may get the information before we do. By the time we hear it, they neutralize the situation or it’s still going on or it’s in process but we have no awareness of it going on.

You know, they evacuate some in this area, and here we be this close [to the plant] and they say you don’t have to [evacuate]. Our awareness is not like it’s supposed to be when things are going on in the neighborhood like it is. We need to know more.”

“Sometimes things happen at the plant and they don’t even tell us.”

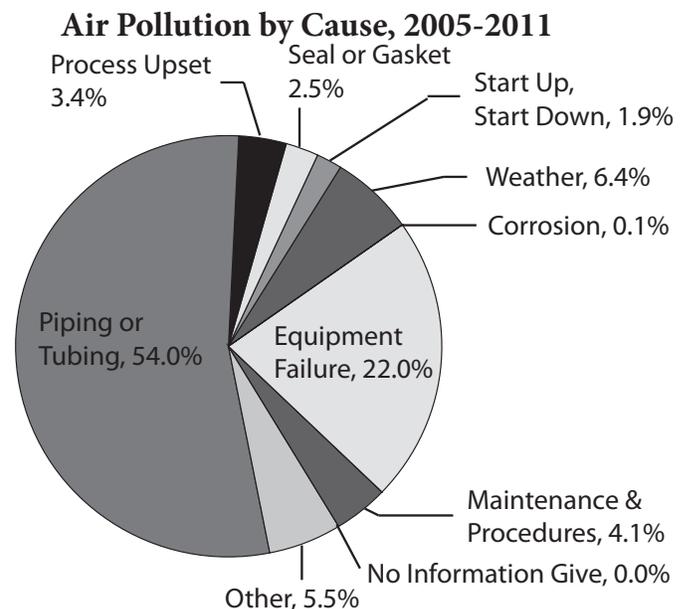
- Calvin Smith of Norco, LA

MOTIVA (NORCO, LA)

According to Motiva Norco’s reports, the following units had the most problems from 2005-2011:

- **Sulfur Plant:** 29 accidents released 34,291 lbs. in 2005-2011.
- **Hydrocracker Unit:** 23 accidents in 2005-2010 released 45,325 lbs.
- **Tanks:** 19 accidents from 2005-2011 released 34,487 lbs. and 15,157 gallons.
- **GO-1 Process Unit:** 12 accidents released 35,455 lbs. in 2005-2011
- **Residual Catalytic Cracking Unit:** 12 total accidents released 1,334,851 lbs. in 2005-2011. The carbon monoxide heater had 2 accidents, released 854,619 lbs. in 2006-2008. The main air blower had 2 accidents, released 151,646 lbs. in 2005-2010.
- **DU-5 Dobson Unit:** 10 accidents released 148,225 lbs. and 66 gallons in 2007-2010.
- **Coke Plant:** 10 total accidents from 2005-2011 released 17,477 lbs. The wet gas compressor had 3 accidents from 2009-2011, and released 3,099 lbs.
- **Boiler:** 4 accidents in 2006-2011 released 19,026 lbs.
- **Flare Gas Recovery System:** 4 total accidents from 2007-2011. The flare gas compressor had 2 accidents from 2007-2011.
- **Process Gas Compressor:** 3 accidents released 79,362 lbs. in 2006-2011.
- **Recycle Gas Compressor:** 3 accidents released 89 lbs. from 2008-2011.

*lbs. or gallons refer to the weight or volume of all pollutants released per unit



Pollution from 2005-2011

- 1.8 million+ pounds
- 19,000+ gallons
- 209 accidents

Trends and Analysis

HEALTH EFFECTS OF POLLUTANTS

All values are reported by refineries from 2005-2011 to the Louisiana Department of Environmental Quality.

CHEMICAL ⁶	AMOUNT RELEASED	POTENTIAL HEALTH EFFECTS
Sulfur Dioxide	10.3 million pounds	Respiratory irritant, mutagen, and cardiovascular toxicant.
Volatile Organic Compounds (VOC)	2.6 million pounds	May cause various irritations, possible cancer risk, and act as a toxicant.
Benzene	154,944 pounds	Known carcinogen. May cause cancer, immune system damage, reproductive damage, headaches, and disorientation.
Hydrogen Sulfide	133,069 pounds	May cause asthma attacks, respiratory, neurological, and eye irritation.
1,3-Butadiene	34,155 pounds	May cause cancer, irritant of the eyes, reproductive system, skin, and neurological system.

*Source: Agency for Toxic Substances and Disease Registry. <http://www.astdr.cdc.gov>

2011 TOP 10 ACCIDENTS BY EMISSIONS

REFINERY	CHEMICAL	RELEASE	DATE	UNIT
Chalmette Refining (ExxonMobil)	Cooling Water (non-contact)	1.3 million gallons	6/5/2011	Outfall 003; Outfall 210
Chalmette Refining (ExxonMobil)	Sulfur dioxide	164,891 pounds	10/10/2011	Flare 1; Sulfur Recovery Unit 1
	Hydrogen sulfide	595 pounds		
CITGO Petroleum	Sulfur dioxide	156,488 pounds	4/26/2011	Multiple Units
Chalmette Refining (ExxonMobil)	Sulfur dioxide	117,344 pounds	5/13/2011	Flare 1; Sulfur Recovery Unit Train II
Motiva Enterprises	Total Pollution	75,714 pounds	3/11/2011	GO-1 Elevated Flare
Norco	Carbon monoxide	40,228 pounds		
Motiva Enterprises	Total Pollution	41,970 pounds	9/26/2011	GO-1 Elevated Flare RCCU Elevated Flare
Norco	Sulfur dioxide	29,638 pounds		
Valero St. Charles Refinery	Volatile organic compounds	37,495 pounds	10/4/2011	Cooling Tower 800
	Benzene	1,027 pounds		
Chalmette Refining (ExxonMobil)	Sulfur dioxide	36,579 pounds	9/11/2011	Flare No. 1
	Hydrogen sulfide	220 pounds		
Calumet Lubricants 8	Sulfur dioxide	30,393 pounds	8/2/2011	Sulfur Recovery Unit
Valero St. Charles Refinery	Isobutane	27,893 pounds	6/18/2011	Spent Acid Alkylation Unit
	Sulfur dioxide	170 pounds		

REFINERY UNIT TRENDS 2005-2011

Identifying problematic units and equipment helps refineries and residents identify the sources of danger in their community. After analyzing the accidents from 2005-2011, several types of equipment appear with greater frequency and release a significant portion of pollution.

Tanks are a common place to find large quantities of chemicals in refineries. Thirteen of the sixteen active refineries had tanks that were the source of repeated accidents between 2005 to 2011.

Sulfur plants are also the source of many accidents. A sulfur plant includes several units, such as the recovery unit and the train. 243 sulfur plant accidents occurred at thirteen refineries from the beginning of 2005 to the end of 2011. These accidents release great volumes of sulfur dioxide and hydrogen sulfide into the air. The health effects range from asthma to cancer.

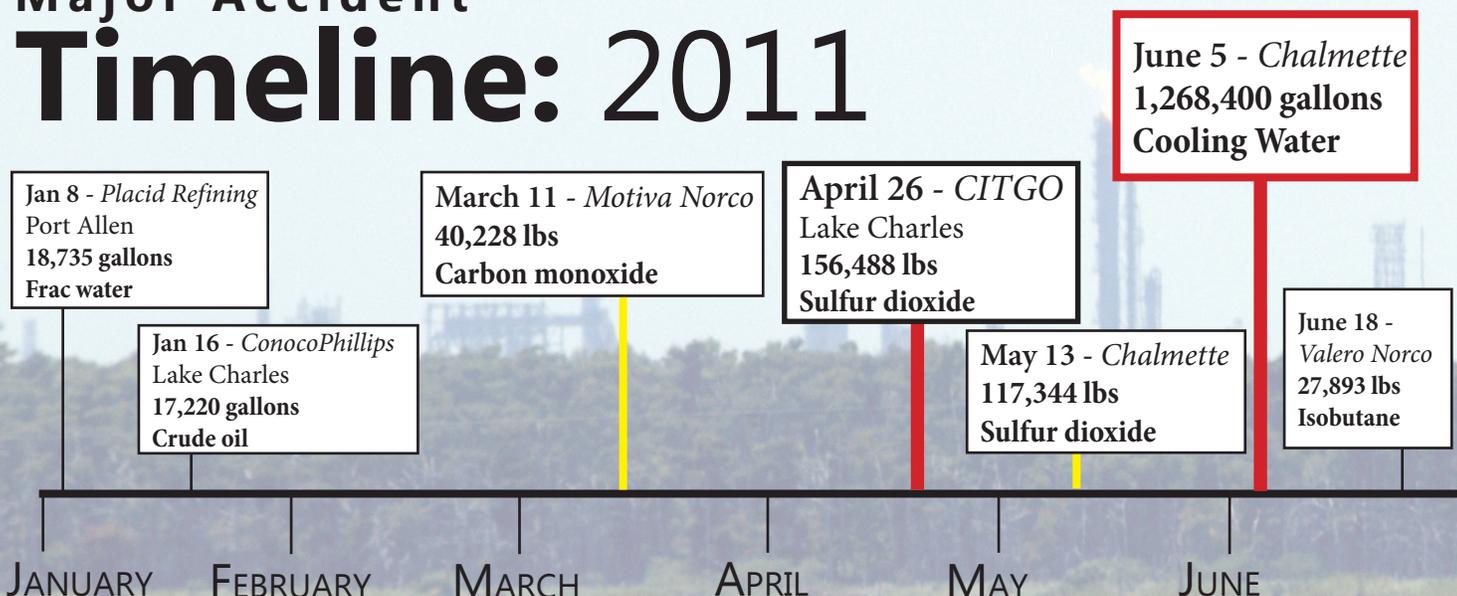
Cooling towers and fluid catalytic cracking units (cat crackers) are also a source of cancer causing pollution. The fluid catalytic cracking unit can have devastating outcomes when large accidents occur. The cooling towers showed an even greater level of pollution per accident from refining units with trends of accidents. In 53 accidents, over

TOP REFINERY UNIT TRENDS FROM 2005-2011

(Chosen by total pollution and listed by the number of refineries with accident trends by unit)

SYSTEM	# OF REFINERIES	# OF ACCIDENTS	AMOUNT OF POLLUTION
Tanks	13	210	2.7 million pounds 2.7 million gallons
Sulfur Plant	13	243	5.3 million pounds 25 gallons
Fluid Catalytic Cracking Unit	10	128	972,516 pounds 100 gallons
Coker Unit	8	124	680,760 pounds
Gas Compressors	7	60	348,238 pounds 5 gallons
Crude Unit	6	39	192,519 pounds 758 gallons
Cooling Towers	5	53	203,242 pounds 1.3 million gallons
Hydrotreater	5	31	57,991 pounds 3,459 gallons
Alkylation Unit	5	25	23,557 pounds
Hydrocracker	3	49	123,400 pounds 104 gallons

Major Accident Timeline: 2011



1.2 million gallons of pollution were released. These two units together show trends of accidents that contribute high combined pollution. These units release high levels of volatile organic compounds, toxicants, and heavy metals into the air and ground water of surrounding communities.

The coker unit produced nearly 340 tons of reported pollution between 2005 and 2011. The coker unit has one of the highest ratios of accidents per refinery in our analysis with 15.5 accidents per refinery (124 accidents in 8 refineries).

Unit Trend: We qualified a unit or system to have a *trend of accidents* if more than two accidents occurred over a period greater than 12 months. We choose this time period because refinery maintenance cycles for broken units in use should occur within the year.

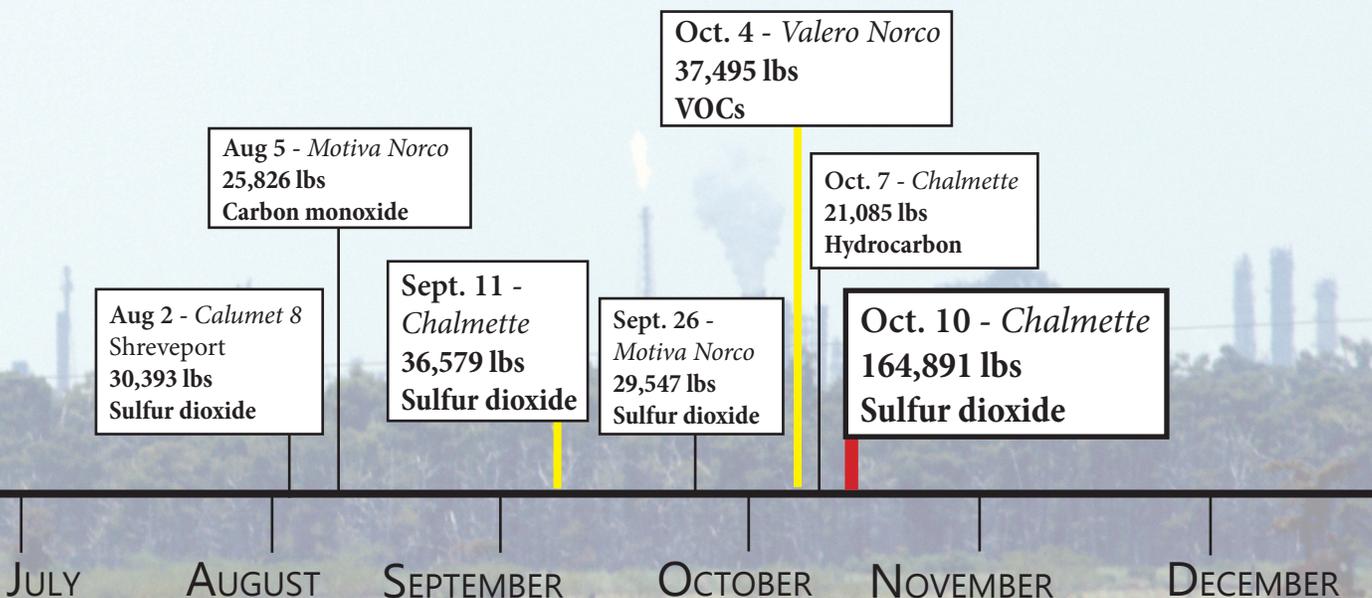
Refinery Emissions in 2011

REFINERY, CITY	2011 ACCIDENTS	AIR EMISSIONS (pounds)	GROUND OR WATER EMISSIONS (gallons)	% CHILD POVERTY (within 2mi of refinery ⁴)
ExxonMobil, Baton Rouge	98	30,985	2,412	45.3%
Chalmette Refining, Chalmette	40	397,852	1,271,925	18.6%
Motiva, Norco	31	181,978	84	17%
Citgo, Lake Charles	24	170,419	3,024	11%
Calumet, Shreveport	19	61,653	12,180	48.2%
Marathon, Garyville	18	36,419	3,179	37.9%

⁴ 2 mile child poverty data drawn from 2009 US Census Block Group from the 2009 Census Tracts. 2005-2009 American Community Survey.

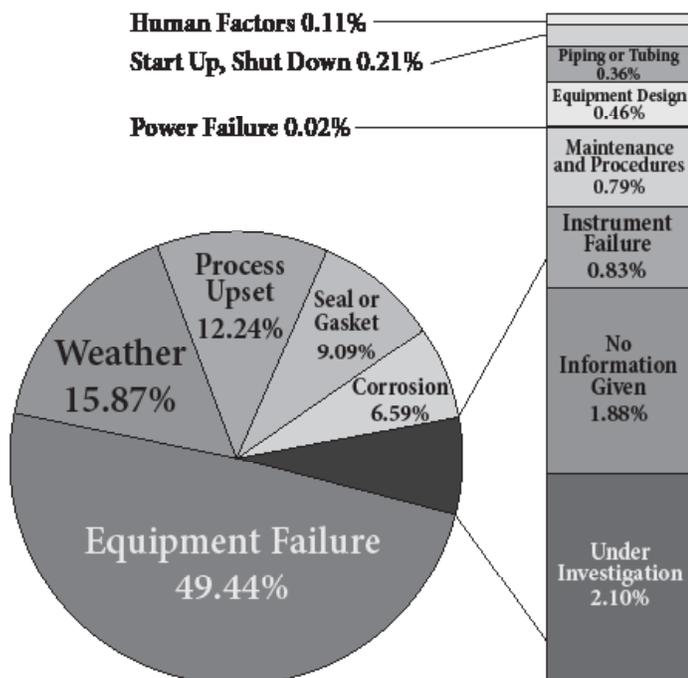
Note on Inadequate Reporting:

Refineries have increased the number of accidents reported as Below Reportable Quantity. When accidents are reported Below Reportable Quantity, the facility is not required to provide any details about the accident such as pollutant released, quantity emitted and the root cause. Accident reports of Below Reportable Quantity releases at ExxonMobil in Baton Rouge increased from nearly 12% from 2005-2007 to more than 70% between 2009-2011.³ A 2011 EPA inspection conducted at Calumet Lubricants in Shreveport found that “in the 161 incident reports selected by EPA for review, 133 [83%] had no or inadequate information and the contributing factors that contributed to the incident were left out of many reports.”²



Emissions via Accidents in 2011 Definitions

Causes of Air Emissions in 2011



Environmental Protection Agency (EPA)

The federal agency charged with permitting, regulating, and enforcing the Clean Air Act, Clean Water Act, and other federal environmental laws.

Louisiana Dept. of Environmental Quality (LDEQ)

The state agency responsible for permitting, regulating, and enforcing state and federal environmental laws in Louisiana.

Clean Air Act

A federal law enacted in 1990 by Congress to prevent and control air pollution and avoid deterioration of the air quality.

Clean Water Act

A federal law enacted in 1972 as an amendment to the Federal Water Pollution Control Act allowing the National Pollutant Discharge Elimination System to regulate point source pollution to the waters of the United States.

Toxicant

A chemical mixture, compound, or element that creates disease in the body.

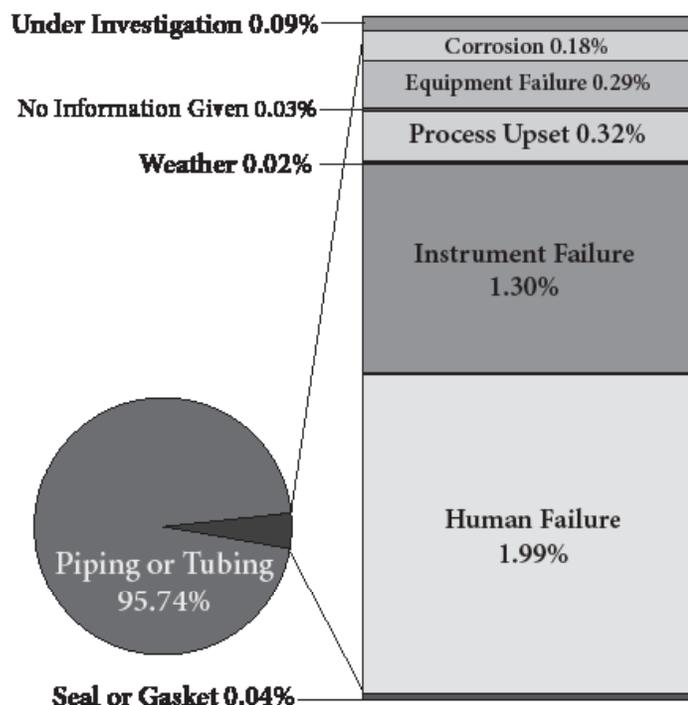
Irritant

Something that causes an immune system reaction to treat or defend the body from damage. We often refer specifically to chemical irritants.

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Causes of Ground & Water Emissions in 2011



Acknowledgments

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**LOUISIANA
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