



COMMON GROUND

WHY COOPERATION TO REDUCE ACCIDENTS AT LOUISIANA REFINERIES IS NEEDED NOW.



This report is dedicated to Shonda Lee
1968—2009

Born and raised next to Shell / Motiva Refinery in Norco
Married and lived with her family near Valero Refinery in New Sarpy

"It's at night when we're sleeping.

The flare burns.

The rumbling, the noise.

I hear it so clear at night..."¹

¹ Louisiana Bucket Brigade, Land Sharks—Orion Refining's Predatory Property Purchases, New Sarpy, LA p. 11, 2002



THE OIL INDUSTRY IS EVERYWHERE IN LOUISIANA. Oil rigs in the Gulf of Mexico are visible from the beach at Grand Isle. Paddle through a bayou in St. Charles Parish or Jean Lafitte National Historic Park and you might see an oil sheen on the water or a glob of oil on the banks. And on your visit to the state capital you are likely to see large flames leaping to the sky. These are refinery flares, a symbol of the more than three million barrels of oil refined every day in Louisiana.¹ The flares are also a signal that something is wrong.

Louisiana's refineries have frequent accidents, known as "incidents" or "unauthorized discharges" in the refining world. When accidents happen, we all suffer the consequences—residents and refinery personnel alike. The technology exists to reduce these accidents. We may have to live with

the oil industry, but we do not have to live with refinery accidents.

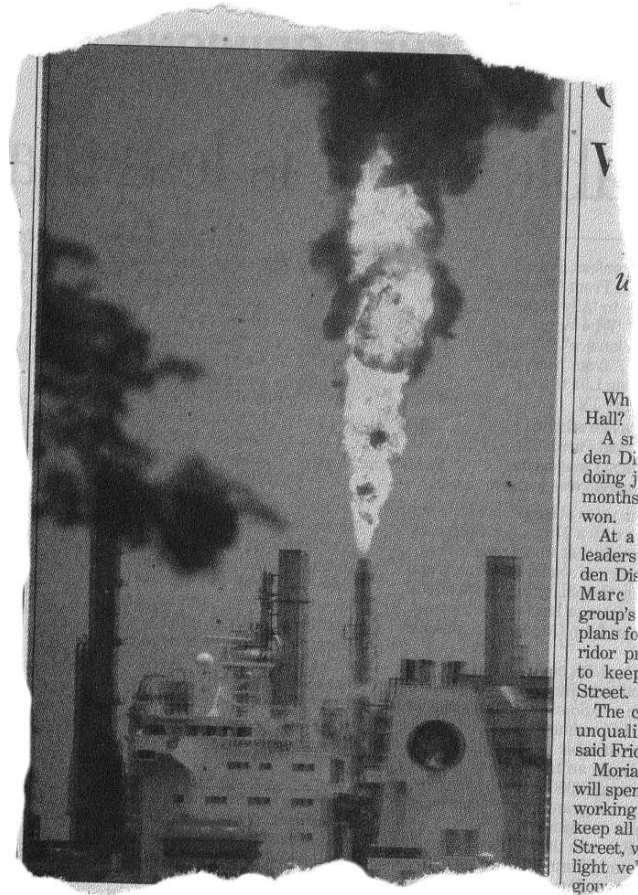
Reducing refinery accidents is an achievable goal, one that is good for everybody in Louisiana—the refineries and for all of us who live in and love our state.

¹ Crouch, Bryan, "Louisiana Crude Oil Refinery Survey Report: Seventeenth Edition, 2008 Survey." Web. 11/2/09 http://dnr.louisiana.gov/sec/execdiv/tehasmt/oil_gas/refineries/refinsurvey_2008.pdf

Common Ground

The Refinery Efficiency Initiative (REI) is a program to reduce accidents at all 17 refineries in Louisiana. This Initiative is led by the Louisiana Bucket Brigade and the community groups in the parishes where refineries are located. These groups include Communities Empowered for Change (Baton Rouge), Residents for Air Neutralization (Shreveport), Concerned Citizens around Murphy (Merchaux), St. Bernard Citizens for Environmental Quality (Chalmette) and the Starr Terrace Neighborhood Association (Mt. Airy). We hope that the refineries will soon be on the list of REI participants.

The Refinery Efficiency Initiative capitalizes on the common ground between refineries and the people in Louisiana who are at risk during refinery accidents, especially during storms.¹ Accidents are bad for the refineries because they lose valuable product. Accidents are also unsafe for refinery workers and for the people of Louisiana. Reducing these accidents is a win for all parties.



This Initiative is inspired by the Environmental Protection Agency's 1999 Episodic Release Reduction Initiative. Despite the EPA's written report released in 2001—including concrete recommendations on ways to reduce flaring and improve refinery performance—accidents continue to be a problem. This is true for the three Louisiana refineries involved in the project—ExxonMobil in Baton Rouge and Motiva's refineries in Convent and Norco—and for nearly all refineries in the state.²

The first step to reducing the refinery accident rate is to understand what that rate is. This report details the accident rate at ten of the largest refineries in Louisiana for the four year period from 2005-2008.

This is the first time that the data from a significant number of refineries has been evaluated collectively, the first time that regulators, residents of Louisiana and the refineries themselves will have a comprehensive, statewide picture of this problem.

¹ US Census Data, 2000

² Episodic Release Reduction Initiative, Environmental Protection Agency. Web. 11/5/09 <http://www.epa.gov/region6/gen/a/erri07-5fin.pdf>

Refineries in Louisiana

REFINERY	TOWN, PARISH	Barrels per Calendar Day ¹	Total Accidents 2005, 2006, 2007, 2008	Pounds of Pollution Release Via Accidents 2005, 2006, 2007, 2008	Number of People Living Within Two Miles
ExxonMobil Refining & Supply Co	Baton Rouge, East Baton Rouge	503,000	456	3,452,376	55,303
Marathon Petroleum Co LLC	Garyville, St John the Baptist	490,000*	92	464,538	4,706
Citgo Petroleum Corp	Lake Charles, Calcasieu	429,500	339	2,990,807	2,918
Valero Refining Co	Norco, St. Charles	250,000	134	221,215	11,454
ConocoPhillips	West Lake, Calcasieu	239,000	186	3,344,554	8,308
Motiva Enterprises LLC	Norco, St. Charles	236,400	86	354,021	5,147
Motiva Enterprises LLC	Convent, St. James	235,000	116	539,613	2,393
Chalmette Refining LLC	Chalmette, St Bernard	196,000	393	6,202,259	59,584
Murphy Oil USA Inc	Meraux, St Bernard	125,000	235	927,983	33,766
Calumet Shreveport LLC	Shreveport, Caddo	65,000	53	42,840	49,920

Louisiana has a significant refining sector. The state refines over three million barrels of oil every day. That's 15% of all oil refined in the United States, second only to the much larger state of Texas.¹ Accident research has been conducted at 10 of the 17 refineries in the state. The emissions noted here are a result of accidents and are NOT part of refineries' permitted emissions. Releases from accidents are beyond what refineries are legally allowed to release.

***This total assumes Marathon's current expansion, making it the fourth largest refinery in the United States.**

¹ Energy Information Administration. Web. 12/2/08 <www.eia.doe>

Methodology

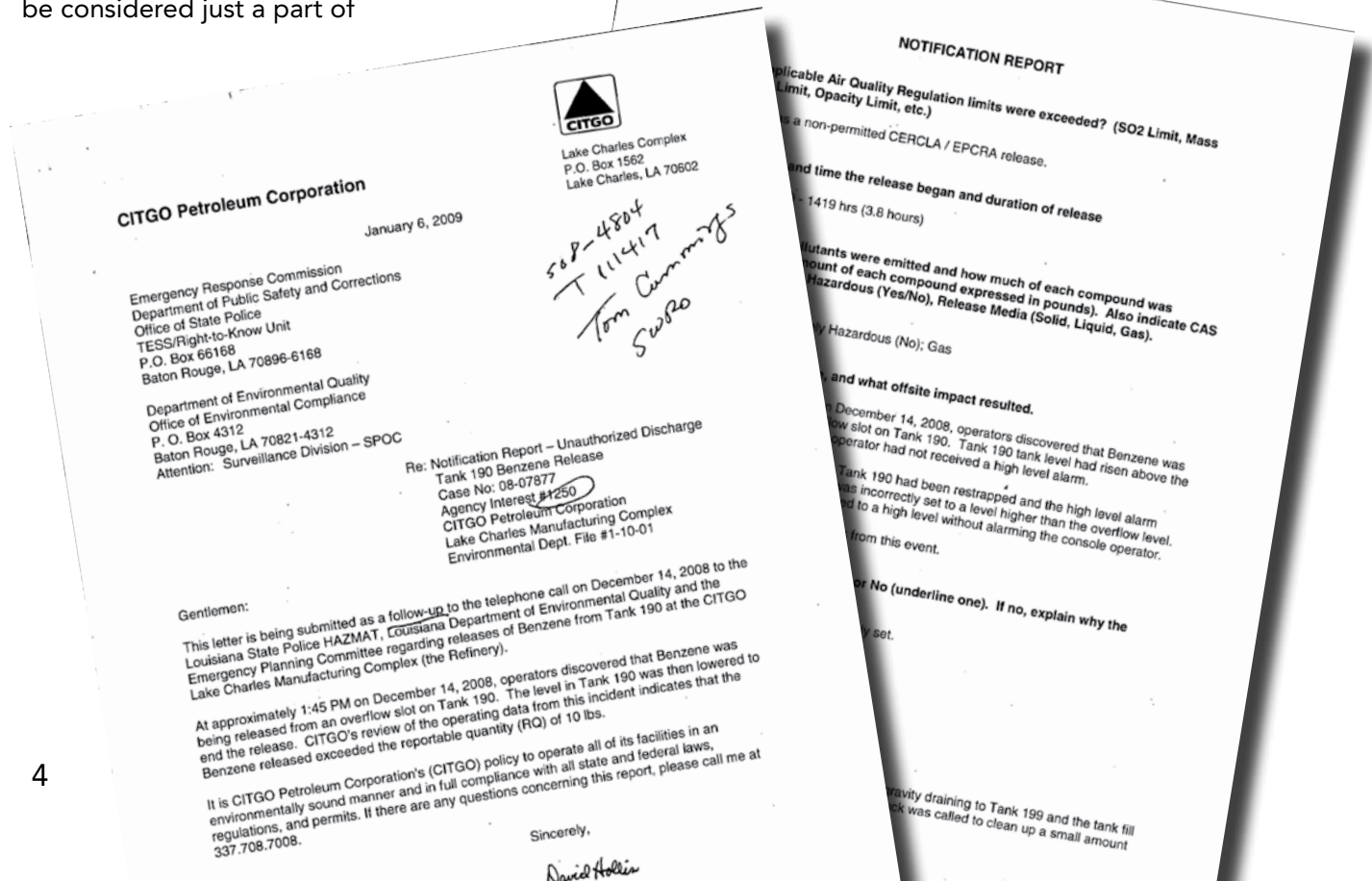
WHEN REFINERIES HAVE AN ACCIDENT, they refer to it as an "incident," "upset," "unauthorized discharge" or "unplanned event." They are required by the federal Clean Air Act to report the problem to a local emergency planning commission and to the Louisiana Department of Environmental Quality (LDEQ). The report takes the form of a letter written to the agencies.

These letters are publicly available in the files at the LDEQ. **All of the information in this report was provided by the refineries to the LDEQ.** Researchers used the data from these letters—approximately 2,261 of them—to determine the annual accident rate at each refinery. An analysis of the cause of each accident was made using the criteria from the EPA's Episodic Release Reduction Initiative.

While this report is based on refinery reports to the LDEQ, refinery neighbors do believe that there are refinery accidents that go unreported. The totals detailed here, therefore, can be considered just a part of

what is actually released. There may be additional reports that LDEQ did not provide to the Louisiana Bucket Brigade despite the public records request. The years examined are 2005, 2006, 2007 and 2008, the most recent years for which complete data is available.

All of this information can be accessed via a database accessible on the web sites of the Louisiana Bucket Brigade (www.labucketbrigade.org) and Environmental Working group (www.ewg.org).



Below Reportable Quantities

EACH CHEMICAL HAS A THRESHOLD that triggers reporting. Refineries are not required to report a release of sulfur dioxide, for example, unless it exceeds 500 pounds. Sludge must not be reported unless more than one pound of it is spilled. Every chemical or substance has such a reportable quantity.

Accidents below reportable quantities have been included in this report because these accidents can be instructive of ongoing issues within the refinery. What's more, the releases can have serious impacts.

An accident involving hydrogen sulfide at Lake Charles' ConocoPhillips refinery on October 22, 2007, details why reportable quantities matter.

"The calculated amount of Hydrogen Sulfide released is 83 pounds. This does not exceed the reportable quantity for Hydrogen Sulfide, therefore [this] is a courtesy call only.

*One employee died shortly after exposure."*¹

¹ Letter from ConocoPhillips to LDEQ, 10/22/07



Storms

TWO OF THE WORST REFINERY ACCIDENTS IN U.S. HISTORY happened in Louisiana due to storms. Review by independent technical experts indicates that these accidents were preventable.

1. June 7, 2001: "The largest tank fire in U.S. history"¹

A report from the Times Picayune gives the details:

"A huge fire started Thursday after lightning hit a gasoline storage tank at Orion Refining Corp.

Heavy rains had caused the tank's floating lid to tip, letting gas pool on the top. Lightning was attracted to the gasoline..."²

At the time, Orion referred to the accident as an act of God, but an analysis by technical expert Wilma Subra found that the drain on the roof was faulty and prevented the lid of the tank from draining.

2. August 29, 2005: "The largest land based oil spill in the world."³ Murphy was sued by neighbors and settled the case for \$330 million dollars.⁴ As part of the settlement Murphy did not admit fault. However, lawyers for the case argued that Murphy failed to follow its own hurricane preparedness guidelines. What is not in dispute is that floodwaters lifted an oil storage tank, causing a million gallons of oil to flow into the surrounding community.

There are ongoing problems with storms apart from the accidents that make history.

REFINERY	PERCENT OF ACCIDENTS DUE TO STORMS	AMOUNT RELEASED DUE TO STORMS 2005—2008
ExxonMobil—Baton Rouge	REPORTING FAILURE Percentage cannot be calculated as ExxonMobil failed to provide a cause for 59% of its accidents	1,290,596 pounds based on the information provided
Motiva—Norco	10%	83,004 pounds
Murphy—Meraux	6%	One million gallons of oil during Hurricane Katrina plus 56,528 pounds
Citgo—Lake Charles	5%	1,273,207 lbs and 2,226,000 gallons
Calumet—Shreveport	6%	12,800 pounds
ExxonMobil—Chalmette	5%	874,694 lbs and 11,661,309 gallons
Motiva—Convent	4%	Incomplete information provided
Valero—New Sarpy	3%	Incomplete information provided

1 Johnson, Clark, Orion Refining Manager to Orion neighbors in community meeting, June 2001
 2 Swerczek, Mary, "Orion Blaze is Extinguished but Neighbors are Fired Up," June 9, 2001, p. 1
 3 Button, Dr. Gregory, Meeting with Murphy neighbors, February 2006
 4 Fallon, Judge Eldon, Patrick Joseph Turner et al vs. Murphy Oil USA, Inc, "Order and Reasons Approving Class Action Settlement," p. 7

ExxonMobil, Baton Rouge
503,000 barrels per calendar day
East Baton Rouge Parish
Population: 414,073

EXXONMOBIL'S BATON ROUGE REFINERY is the second largest refinery in the United States. What is striking about ExxonMobil is not simply the volume of barrels it refines, the high number of accidents and its failure to provide causes for those accidents, but also the contrast between the refinery and the surrounding community.

Located in the capital of Louisiana and visible from the Louisiana Department of Environmental Quality, the ExxonMobil refinery is part of the corporation that, year after year, breaks records for annual profit. In 2007 the record profit was \$40.61 billion. In 2008 the record profit was \$45.22 billion.

The 2000 census—the most recent data available—provides the following numbers about

Exxon's Baton Rouge neighbors. The closer you live to ExxonMobil, the worse off you are.

In 2008 the facility had 193 accidents, an average of 3.7 accidents per week.

The map on pages 10 and 11 show ExxonMobil's proximity to schools in Baton Rouge

Entity	Population	% Black	Median Income	Unemployment	% Without a High School Diploma	% in Poverty	% of Children in Poverty
East Baton Rouge Parish	414,073	39.6%	\$38,541.84	6.3%	16.1%	17.8%	23.0%
Within 2 miles of ExxonMobil's Baton Rouge Refinery	55,303	86.7%	\$21,982.31	12.4%	37.7%	34.1%	45.3%

Year	TOTAL POUNDS FROM ACCIDENTS	TOTAL GALLONS FROM ACCIDENTS	TOTAL ACCIDENTS	Number Preventable	Equipment Failure	Process Upset	Human Factor	Start Up / Shut Down	Maintenance / Procedures	Equipment Design	Corrosion	Instrument Failure	Seal or Gasket	Piping or Tubing	Other	No information given	Storms
2005	503,472	3,452	75	26	2	5	5	2	1	1	8	14	3	5	15	13	7
2006	725,067	0	78	6	10	0	2	1	1	0	13	4	1	1	1	44	0
2007	769,392	5,551	107	21	10	7	5	1	0	0	12	2	3	3	3	58	3
2008	1,454,445	26,607	193	12	11	8	3	0	0	0	9	1	0	3	0	151	7
TOTAL for four years	3,452,376	35,610	453	65	33	20	15	4	2	1	42	21	7	12	19	266	11
Percentage			100%	14%	7%	4%	3%	1%	0%	0%	9%	5%	2%	3%	4%	59%	2%

Common Ground

CITGO Petroleum, Lake Charles / Westlake
429,500 barrels per calendar day
Calcasieu Parish
Population: 183,577

THE MAP ON THE RIGHT notes Citgo’s central position to the waterways of Calcasieu Parish. Despite the avid fishing and hunting community in the area, the refinery dumps significant amounts of chemicals into the waterways.

Year	TOTAL POUNDS FROM ACCIDENTS	TOTAL GALLONS FROM ACCIDENTS	TOTAL ACCIDENTS	Number Preventable	Equipment Failure	Process Upset	Human Factor	Start Up / Shut Down	Maintenance / Procedures	Equipment Design	Corrosion	Instrument Failure	Seal or Gasket	Piping or Tubing	Other	No Information	Storms
2005	1,808,814	2,151	101	10	7	12	6	5	8	3	0	2	3	11	3	33	8
2006	469,530	2,226,000	37	4	4	2	1	2	2	0	0	1	3	6	1	13	2
2007	351,183	12,432	113	6	16	9	3	23	1	0	2	2	10	9	11	22	5
2008	361,280	2,316	88	4	18	3	4	14	5	0	0	1	1	10	18	11	3
TOTAL for four years	2,990,807	2,242,899	339	24	45	26	14	44	16	3	2	6	17	36	33	79	18
Percentage			100%	7%	13%	8%	4%	13%	5%	1%	1%	2%	5%	11%	10%	23%	5%

Year in and year out, inadequate storm preparedness is one of the biggest problems at this facility.

2005

- Fifty percent of the flare pilot light outages were caused by wind and rain.
- Hurricane Rita hit Lake Charles and caused refinery accidents on 15 separate days in the 30 days following the storm. Hundreds of gallons of oil were spilled as were 562,007 pounds of volatile organic compounds and sulfurs.

2006

In an accident on June 19, 2006, rainfall runoff exceeded the available capacity of the wastewater treatment system storm water tanks, and **over two million gallons of oil were spilled.**

In reviewing this case, Judge Canady found that CITGO underbuilt 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.

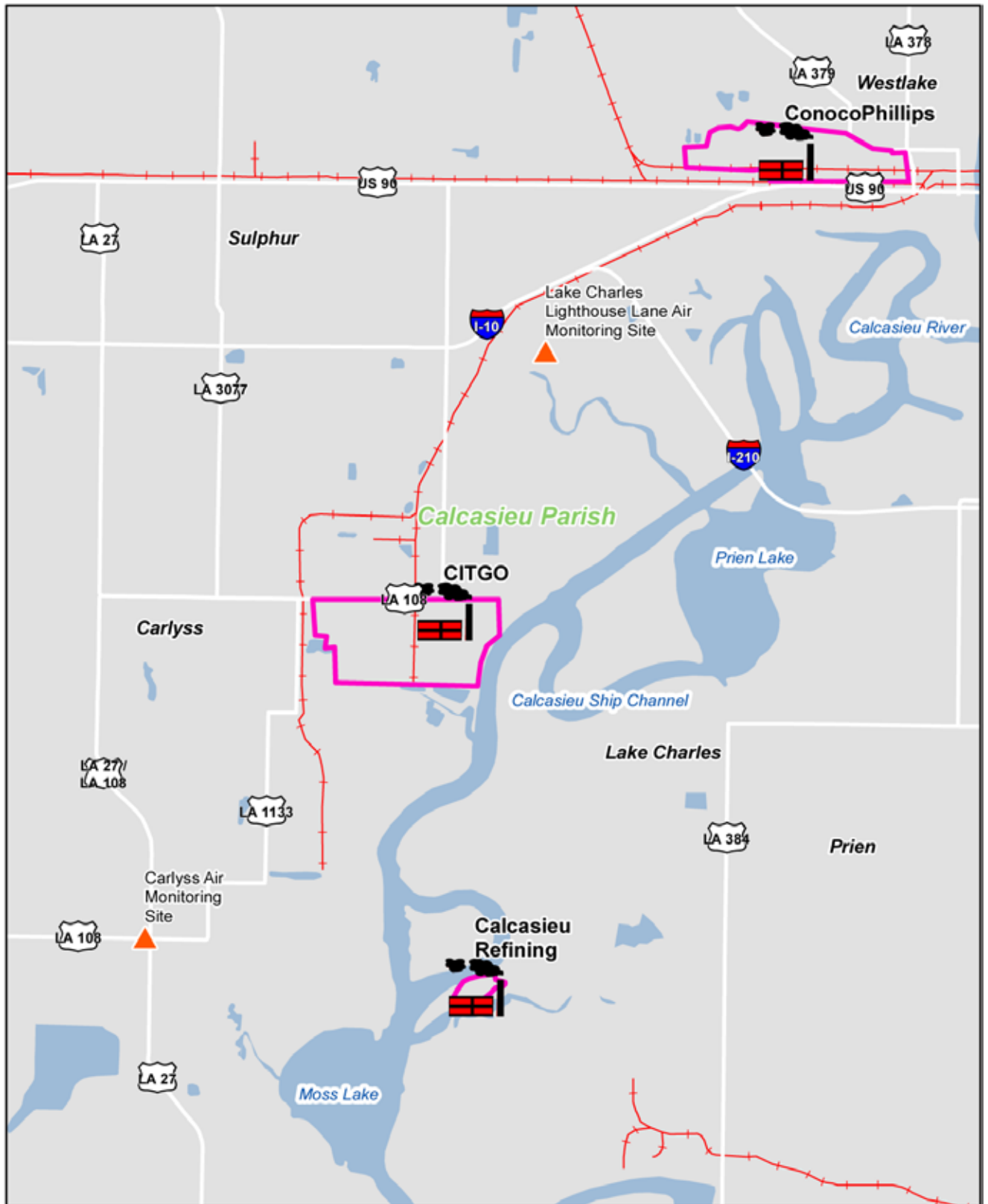
2007

Storms caused accidents on five separate occasions in 2007. On June 4th, 2007, rain slipped through a gap in a substation wall and cut power to a large part of the refinery. Over the next 32 hours, the following emissions occurred:

Sulfur Dioxide—**237,141 lbs**
 Hydrogen Sulfide—**1,649 lbs**
 Crude Oil—**1,677 lbs**

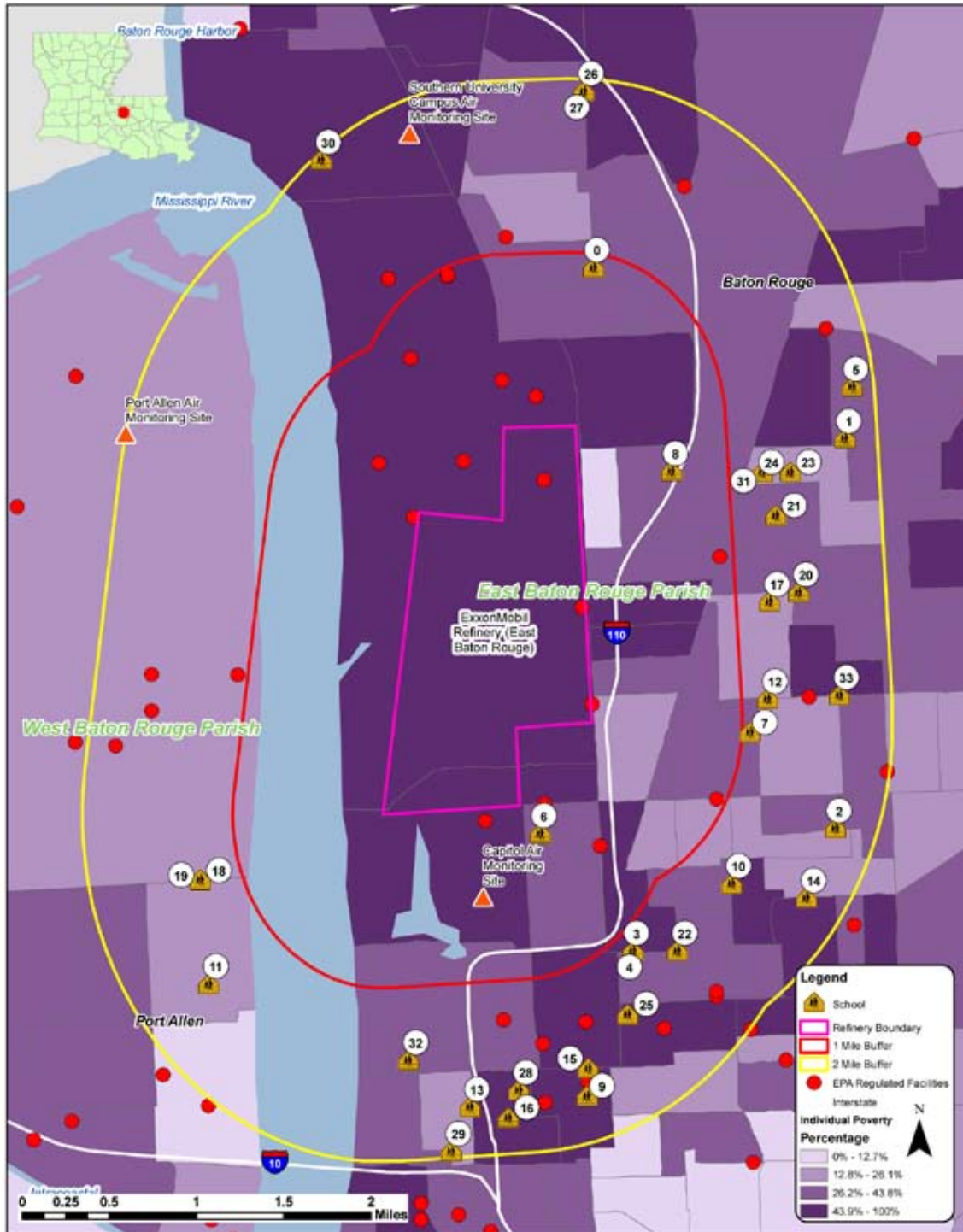
2008

On December 14, 2008 an incident occurred at Tank 190 that released 92,578 pounds of benzene as a result of an alarm that was improperly set. Benzene is a known carcinogen.



Common Ground

Over 12,000 school children and school personnel are in the 33 schools within two miles of ExxonMobil. This situation is indicative of the lack of meaningful zoning policies.



MAP NUMBER	NAME
0	Banks Elementary School
1	Baton Rouge Marine Institute, Inc.
2	Belfair Montessori School
3	Capitol Pre-College Academy for Boys
4	Capitol Pre-College Academy for Girls
5	Claiborne Elementary School
6	Community School For Apprenticeship Learning
7	Dalton Elementary School
8	Delmont Elementary School
9	Dufrocq Montessori School
10	Eden Park Elementary School
11	Holy Family School (C)
12	Istrouma Senior High School
13	J. K. Haynes Elementary Charter School
14	McKinley Middle Magnet School
15	Louisiana New School Academy
16	Louisiana School for the Visually Impaired

MAP NUMBER	NAME
17	Mohican Education Center
18	Port Allen Elementary School
19	Port Allen Middle School
20	Prescott Middle School
21	North Highlands Elementary School
22	Park Elementary School
23	Redemptorist Diocesan Regional High School (C)
24	Redemptorist Diocesan Regional Junior HS (C)
25	Sacred Heart Elementary School (C)
26	Scotlandville Elementary School
27	Scotlandville Magnet High School
28	Shiloh Baptist Early Learning Academy
29	South Boulevard Extended Day School
30	Southern University Lab School
31	St. Gerard Majella School (C)
32	St. James Episcopal Day School

The following citizen complaints about ExxonMobil are taken from the files of the LDEQ. These complaints were actually filed by LDEQ employees, not in their official capacity, but as private citizens bothered by ExxonMobil. The schoolchildren near ExxonMobil are subject to these types of problems.

"There has been a sulfur odor inundating the LDEQ laboratory. The odor was pervasive on Sept 19 & 20, and again on Sept 28 and today Oct 2." October 2, 2005

"My wife and I drive past Exxon every day from Baker to LDEQ. In the last few days, there have been visible particulate emissions coming from the tall stack at Exxon. Yesterday the particulate plume was heavy enough that it was similar to mild sandstorms I encountered while living in El Paso, Texas." March 12, 2008

Common Ground

**Murphy Refinery, Meraux
125,000 barrels per calendar day
St. Bernard Parish
Population: 67,229**

MURPHY OIL HAS RECENTLY BEEN SUED by its neighbors for violating the Clean Air Act because of its accidents.

When Murphy has an accident, the neighbors suffer the consequences. Many of the neighbors have stopped calling due to inaction on the part of LDEQ and Murphy. Others are too frightened to speak out for fear of reprisals. This fear is well founded. Murphy has personally attacked community leaders for their concern instead of focusing on solving their serious accident problem.

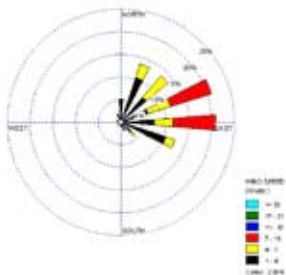
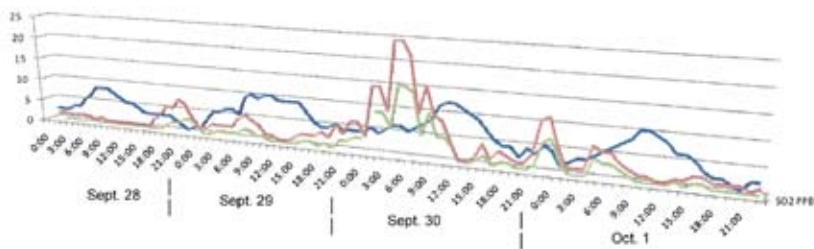
“Due to the strong odor from the refinery, it was hard to stay outside for a long period of time. We were trying to decorate our home for Christmas and had to continue stopping to come in for awhile. The odor started early in the morning and lasted all through the day. When will this ever stop? I do notice it has gotten worse especially since Katrina. Do they not care about our health or our quality of living? It is very discouraging when you cannot even enjoy being outside of your



home.” Citizen complaint from the LDEQ files, 12/14/08; the complainant asked to remain anonymous for fear of Murphy’s reprisals

Year	TOTAL POUNDS FROM ACCIDENTS	TOTAL GALLONS FROM ACCIDENTS	TOTAL ACCIDENTS	Number Preventable	Equipment Failure	Process Upset	Human Factor	Start Up / Shut Down	Maintenance / Procedures	Equipment Design	Corrosion	Instrument Failure	Seal or Gasket	Piping or Tubing	Other	No information given	Storms
2005	625,680	5,400,213	37	0	20	5	0	0	4	1	0	2	0	1	0	0	5
2006	119,997	0	12	3	4	0	1	4	0	0	0	0	1	0	0	1	7
2007	74,116	21,553	71	3	8	12	2	0	2	0	1	1	0	2	4	37	2
2008	105,230	1,029	87	10	16	1	3	5	2	1	2	3	0	1	5	44	5
TOTAL for four years	925,023	5,422,795	207	16	48	18	6	9	8	2	3	6	0	5	9	82	13
Percentage				8%	23%	9%	3%	4%	4%	1%	1%	3%	0%	2%	4%	40% #	6%

Citizen Complaints During Murphy Oil's 9/28/07-10/01/07 Accidental Release of 23, 598 lbs of SO2



Common Ground

Chalmette Refining (ExxonMobil), Chalmette 196,000 barrels per calendar day St. Bernard Parish Population: 67,229

BOTH REFINERIES IN ST. BERNARD PARISH HAVE BEEN SUED for violating the Clean Air Act. Exxon-Mobil's accidents at its Chalmette Refining facility are of particular interest given the refinery's history of violating the Clean Air Act.

The Clean Air Act law suit filed against Chalmette Refining detailed the number of accidents, referred to as unauthorized discharges.

"By way of example and not limitation: between March 12, 2001 and October 24, 2003, Chalmette Refining has had over 100 unauthorized discharges due to equipment failures."¹

In 2007 Chalmette Refining was found guilty of 2,665 violations of the Clean Air Act. Since being sued by its neighbors, Chalmette continues to have a high accident rate. The refinery has an astounding total of emissions via accidents—over 6 million pounds for the period under review. Their



performance does not seem to have improved in any meaningful way since being found guilty. What is different, however, is their reporting.

Refineries may violate the Clean Air Act if an incident is "preventable." ExxonMobil got into trouble in Chalmette because many of their letters to LDEQ listed their incidents as "preventable." In four years of reporting examined here, nearly all of Chalmette Refining's incidents are "not preventable." Most of those that are deemed preventable are due to human error. It appears

¹ St. Bernard Citizens for Environmental Quality and Louisiana Bucket Brigade vs. Chalmette Refining, L.L.C., p. 11, 2/12/05

that a blanket assessment—rather than a genuine evaluation—is being made.

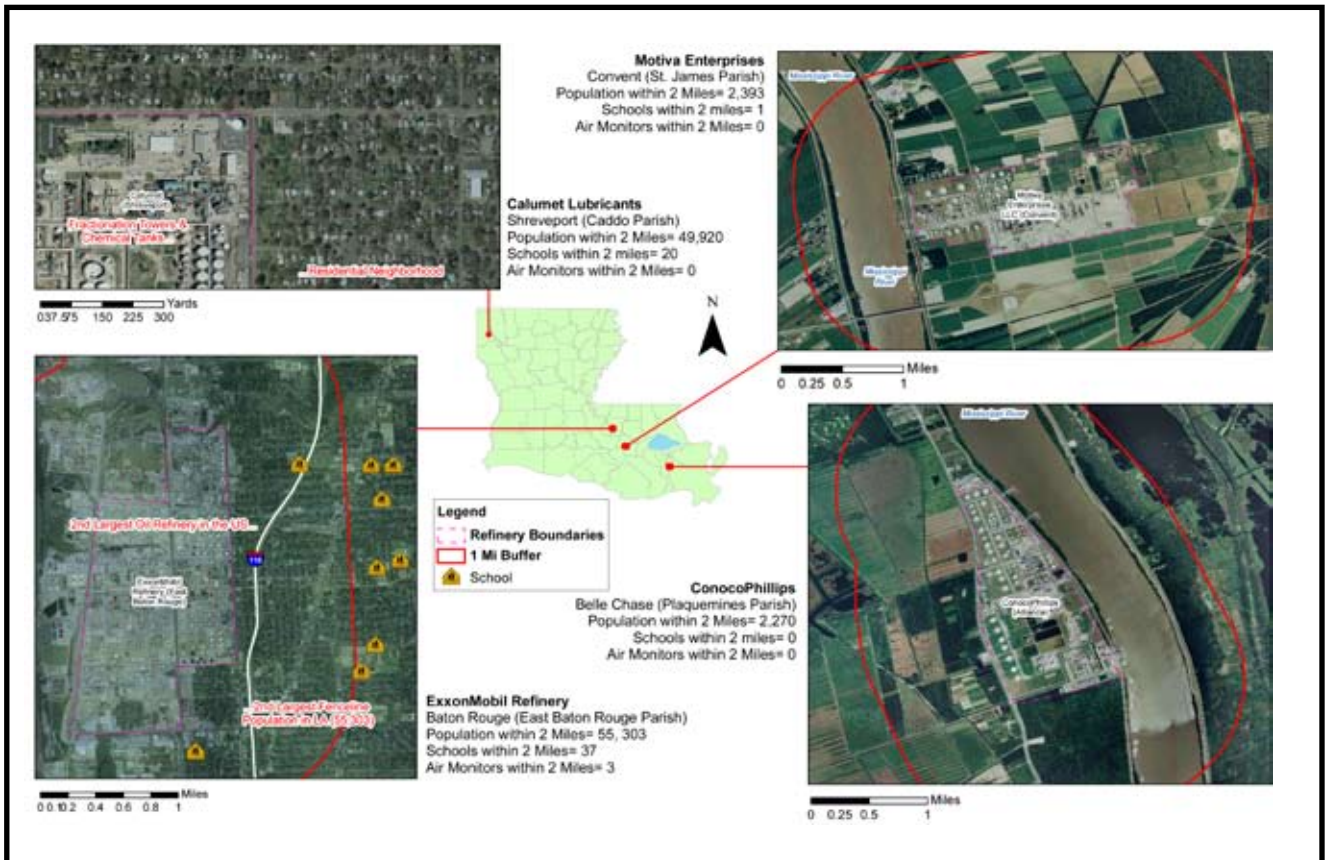
Chalmette Vista is the neighborhood that gets the brunt of Chalmette Refining’s emissions. The neighborhood, like everything else in the parish, was destroyed by Hurricane Katrina. Many of the Chalmette Vista residents did not return after the storm. ExxonMobil and parish leaders missed an

opportunity to inject common sense into parish zoning policies and create a buffer zone around the refinery. This would have reduced Exxon-Mobil’s liability and created a safer community. Instead, many new families built homes and moved into the neighborhood, unaware of Chalmette Refining’s history of accidents and Clean Air Act violations.

Year	TOTAL POUNDS FROM ACCIDENTS	TOTAL GALLONS FROM ACCIDENTS	TOTAL ACCIDENTS	Number Preventable	Equipment Failure	Process Upset	Human Factor	Start Up / Shut Down	Maintenance / Procedures	Equipment Design	Corrosion	Instrument Failure	Seal or Gasket	Piping or Tubing	Other	No information given	Storms
2005	2,010,554	6,376	88	6	25	9	6	1	1	0	0	4	1	8	9	18	5
2006	1,323,051	434	88	8	13	6	5	11	4	0	1	6	4	10	10	14	7
2007	523,624	137	134	9	12	5	7	9	8	1	8	5	3	8	22	35	6
2008	2,345,031	11,655,072	72	7	7	3	6	3	3	1	4	2	1	8	7	16	10
TOTAL for four years	6,202,260	11,662,019	382	30	57	23	24	24	16	2	13	17	9	34	48	83	22
Percentage			100%	8%	15%	6%	6%	6%	4%	1%	3%	4%	2%	9%	13%	22%	# 6%



Common Ground



Calumet Refinery, Shreveport
Barrels per calendar day: 65,000
Caddo Parish
Population: 263,968

SHREVEPORT IS YET ANOTHER EXAMPLE—like Baton Rouge and Chalmette—of terrible zoning. The map to the left shows buffer zone scenarios in which the refineries threaten far fewer people. Buffer zones in Louisiana are fraught with tension as most have been created when refineries scoop up land from residents on the cheap. What’s more, refineries usually expand upon the land and move still closer to people.

Calumet Refinery is in Shreveport, a major population center within Louisiana. The neighborhood closest to Calumet is just a few feet away from the refinery’s fence line. There is no scenario under which this proximity is safe. The neighbors, led by Residents for Air Neutralization, are currently advocating for relocation.

The accidents add to the problem.

The accidents have implications for the neighbors

“Early in the morning at 4am we used to hear bomb type sounds. There isn’t a siren or anything to let us know if we are in danger or not. The smell is bad. Some family members have passed away from cancer and the kids have allergies.” RAN Member, Meeting with Calumet, 9/10/09

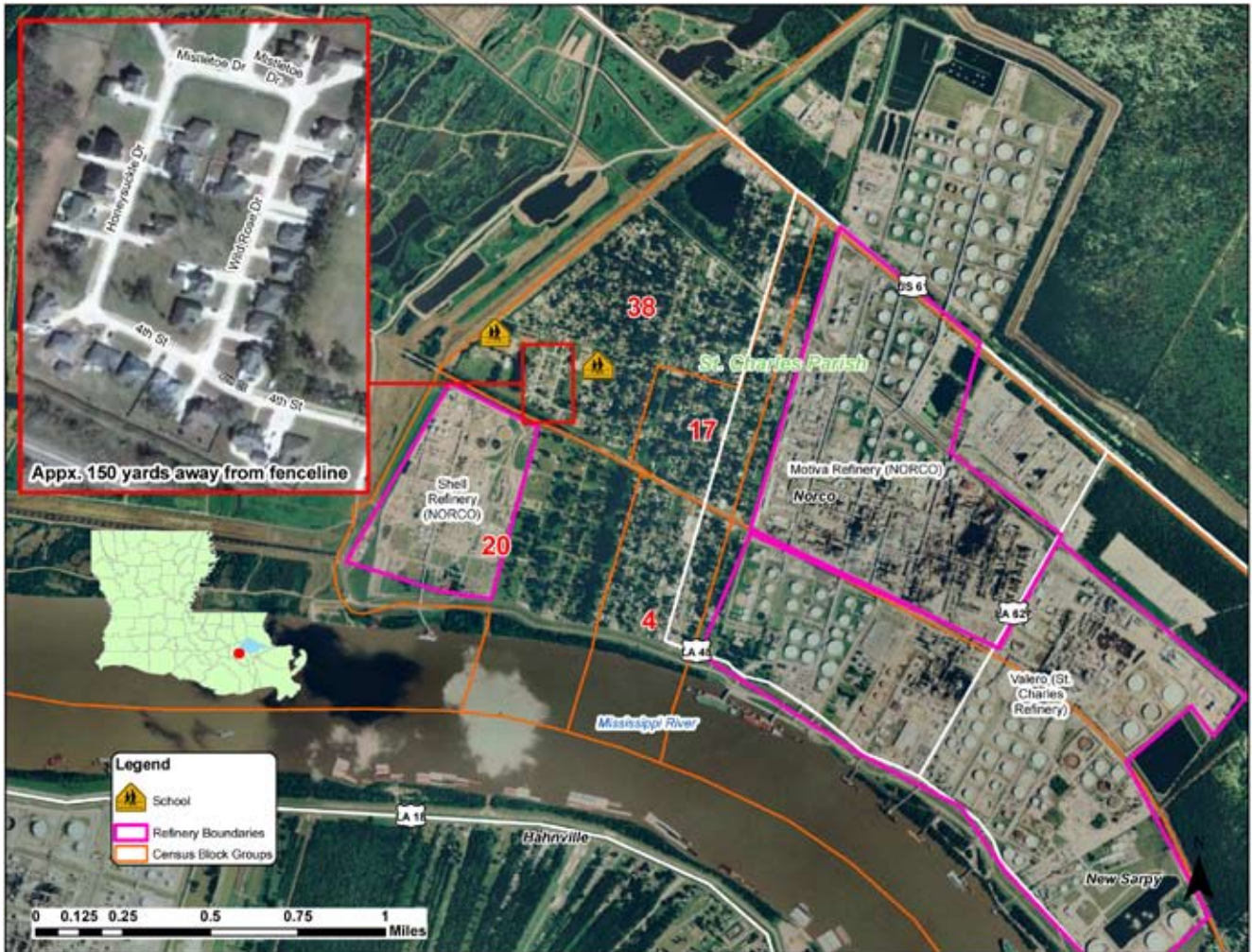
“One day I came home and there was a large cloud of smoke. Smoke came in the house directly. It burned my eyes, I could smell it. I called several



times to report it, but nothing happened. I called Calumet but they don’t give you a direct answer. I was given the name of someone at LDEQ, but no one ever calls me back.” RAN Member, Meeting with Calumet, 9/10/09

Year	TOTAL POUNDS FROM ACCIDENTS	TOTAL GALLONS FROM ACCIDENTS	TOTAL ACCIDENTS	Number Preventable	Equipment Failure	Process Upset	Human Factor	Start Up / Shut Down	Maintenance / Procedures	Equipment Design	Corrosion	Instrument Failure	Seal or Gasket	Piping or Tubing	Other	No information given	Storms
2005	6,595	6,732	18	11	5	1	2	0	0	0	0	5	2	1	2	0	0
2006	16,018	2	5	2	1	0	0	0	0	0	0	0	3	0	0	0	7
2007	107	12055	10	7	2	1	3	0	1	0	0	0	1	0	1	0	0
2008	20,120	8,094	20	8	3	0	3	0	2	0	1	0	2	3 (All power 2 failure)	2	0	2
TOTAL for four years	42,840	26,283	53	28	11	2	8	0	3	0	1	5	8	3	3	0	3
Percentage				53%	23%	4%	15%	0	6%	0	2%	9%	15%	6%	15%	6%	6%

Common Ground



Norco is one of the worst examples of zoning. In 2002 a four street neighborhood called Diamond convinced Shell Chemical and Shell Refinery (Motiva) to purchase its contaminated property. Even as the Diamond community was advocating for and winning this buy out, a new neighborhood was under construction.

It is only a matter of time until these neighbors, too, begin complaining of the emissions from the former Shell Chemical plant and the nearby Motiva Refinery.

Motiva Refineries

THE TWO MOTIVA REFINERIES were included in the EPA's Episodic Release Reduction Initiative of 1999. Nonetheless, the refineries continue to have problems with their accidents.

One of the most intriguing statistics from the Motiva reports is the dramatic drop off in the number of incidents reported at both refineries from 2005 to 2008. It is unusual to see such a dramatic reduction. If the refineries really improved performance so significantly, then there are important lessons that should be shared with other refineries.

There is a chance that LDEQ did not provide all of Motiva's letters or that Motiva did not report all of its accidents. In both cases, the accident rate would be much actually higher.

Motiva Refinery, Convent

235,000 barrels per calendar day

Post expansion capacity (to be completed in 2009): 436,000 barrels per day

St. John Parish

Population: 43,055

Year	TOTAL POUNDS FROM ACCIDENTS	TOTAL GALLONS FROM ACCIDENTS	TOTAL ACCIDENTS	Number Preventable	Equipment Failure	Process Upset	Human Factor Start Up / Shut Down	Maintenance / Procedures	Equipment Design	Corrosion	Instrument Failure	Seal or Gasket	Piping or Tubing	Other	No information given	Storms	
2005	52,955	2,896	33	6	3	0	1	4	2	0	2	4	3	8	4		
2006	96,210	0	2	0	0	0	1	0	0	0	0	0	0	1	0		
2007	199,151	0	32	4	2	2	1	6	3	0	1	2	4	9	2		
2008	191,297	942	49	1	10	5	0	2	2	0	3	4	14	3	7		
TOTAL for four years	539,613	3,838	116	11	15	7	2	13	7	0	5	5	5	12	26	14	5
Percentage			100%	9%	13%	6%	2%	11%	6%	0%	4%	4%	4%	10%	22%	12%	4%

Motiva Refinery, Norco

236,400 barrels per calendar day

St. Charles Parish

Population: 48,072

Year	TOTAL POUNDS FROM ACCIDENTS	TOTAL GALLONS FROM ACCIDENTS	TOTAL ACCIDENTS	Number Preventable	Equipment Failure	Process Upset	Human Factor Start Up / Shut Down	Maintenance / Procedures	Equipment Design	Corrosion	Instrument Failure	Seal or Gasket	Piping or Tubing	Other	No information given	Storms
2005	124,085	7,905	36	4	4	3	3	1	6	0	0	1	5	2	6	5
2006	211,996	588	29	4	0	6	1	8	2	0	1	0	0	3	2	7
2007	163	0	4	3	0	1	0	1	0	0	0	0	0	2	0	0
2008	17,777	1,851	11	2	4	0	0	1	1	0	0	0	2	1	0	2
TOTAL for four years	354,021	10,344	80	13	8	10	4	11	9	0	1	0	1	12	8	8
Percentage			100%	16%	10%	13%	5%	14%	11%	0%	1%	0%	1%	15%	10%	10%

Common Ground

Marathon Refinery, Garyville, near the towns of Mt. Airy and Reserve
255,000 barrels per calendar day
After the expansion in 2009, projected capacity is 436,000 bpd
St. John Parish
Population: 43,055

MARATHON'S REPORTS TO THE LDEQ include calculations regarding the efficiency of their flares. This calculation is important; it shows the faith that the refinery puts in their engineering.

Marathon's calculations state that the flare is 99.5% efficient. This means that the flare incinerates 99.5% of the chemicals they are releasing and that very few end up being released into the surrounding area.

This assumption of flare efficiency and its combustion of harmful chemicals, however, is overly optimistic. Newer evidence indicates that combustion is much lower under real world factors like weather (e.g. high winds) or operating conditions.¹

Year	TOTAL POUNDS FROM ACCIDENTS	TOTAL GALLONS FROM ACCIDENTS	TOTAL ACCIDENTS	Number Preventable	Equipment Failure	Process Upset	Human Factor	Start Up / Shut Down	Maintenance / Procedures	Equipment Design	Corrosion	Instrument Failure	Seal or Gasket	Piping or Tubing	Other	NO information given	Storms
2005	325,880	4,020	19	5	4	5	2	0	0	0	1	0	5	0	1		7
2006	12,516	0	13	2	7	2	0	0	1	0	0	1	1	1	0	0	0
2007	20,912	583	30	8	5	5	3	0	1	0	0	0	1	10	5	0	0
2008	105,230	1,029	88	3	16	1	4	5	2	0	2	3	0	1	5	44	5
TOTAL for four years	464,538	5,632	150	18	32	13	9	5	4	0	2	5	2	17	10	45	6
Percentage			100%	12%	21%	9%	6%	3%	3%	0%	1%	3%	1%	11%	7%	30%	4%

"On the street next to mine are a child and an adult who are constantly in the hospital because of respiratory problems. Another example is my four-year-old grand nephew. Last week his Grandmother (my niece) had to take him to the hospital because of asthma. It was a very serious attack and he had to receive four breathing treatments, medicine by mouth and steroids and other fluids from an I.V. I also have wheezing and sinus problems. My eyes are red and I can hardly see out of them. Several years ago a doctor found a spot on my lung. If there were just one or two or even three people here with problems like this then you could say it is normal, and we could live with it. But it seems like an epidemic. I can walk up and down my street and find people with all kinds of respiratory ailments and cancer."

Marathon neighbor, Verlina Simmons 1/09

¹ Blackwood, Thomas, "An Evaluation of Flare Combustion Efficiency Using Open Path Fourier Transform Infrared Technology," The Journal of the Air and Waste Management Association, Volume 50, October 2000.

Valero Refinery, New Sarpy
250,000 barrels per calendar day
St. Charles Parish
Population: 48,072

VALERO'S ST. CHARLES REFINERY used to be the Orion Refinery. The refinery has an infamous history regarding accidents; it was the site of the largest tank fire in U.S. history and one of the refineries in Louisiana that has been sued for violating the Clean Air Act.

Year	TOTAL POUNDS FROM ACCIDENTS	TOTAL GALLONS FROM ACCIDENTS	TOTAL ACCIDENTS	Number Preventable	Equipment Failure	Process Upset	Human Factor	Start Up / Shut Down	Maintenance / Procedures	Equipment Design	Corrosion	Instrument Failure	Seal or Gasket	Piping or Tubing	Other	No information given	Storms
2005	105,219	2,310	25	3	3	4	0	3	1	0	0	2	0	4	4	2	2
2006	37,839	0	26	0	10	1	0	2	1	0	1	1	2	6	1	1	0
2007	35,754	603	37	3	14	5	1	0	4	0	0	2	0	7	0	7	0
2008	42,403	2,102,581	40	0	12	2	0	4	5	1	1	1	0	4	10	0	2
TOTAL for four years	221,215	2,105,494	128	6	39	12	1	9	11	1	2	6	1	17	20	10	4
Percentage			100%	5%	29%	9%	1%	7%	8%	1%	1%	4%	1%	13%	15%	7%	3%



Common Ground

ConocoPhillips, Westlake
239,000 barrels per calendar day
Calcasieu Parish
Population: 183,577

THERE ARE THREE REFINERIES IN CALCASIEU PARISH. ConocoPhillips, not far from Citgo, is the site of the fatal accident noted previously, when a worker died after being exposed to hydrogen sulfide. Nine other workers were sent to the hospital because of the same accident.

This accident happened on October 22, 2007. There was no follow up report on file at LDEQ to explain what happened. A lack of follow up re-

ports is common. In 2006 there were no follow up reports filed, even when reports were promised.

Year	TOTAL POUNDS FROM ACCIDENTS	TOTAL GALLONS FROM ACCIDENTS	TOTAL ACCIDENTS	Number Preventable	Equipment Failure	Process Upset	Human Factor	Start Up / Shut Down	Maintenance / Procedures	Equipment Design	Corrosion	Instrument Failure	Seal or Gasket	Piping or Tubing	Other	No information given	Storms
2005	205,213	361,593	83	21	20	2	5	2	21	0	2	5	0	2	4	9	77
2006	93,467	0	35	9	3	1	2	7	7	0	0	3	0	2	7	3	0
2007	91,808	8,482	52	11	10	2	5	1	1	0	1	5	2	6	5	10	4
2008	27,002	1,853	38	4	5	1	3	7	0	0	1	1	0	7	7	1	5
TOTAL for four years	417,484	371,928	208	45	38	6	15	17	29	0	4	14	2	17	23	23	20
Percentage			112%	24%	20%	3%	8%	9%	16%	0%	2%	8%	1%	9%	12%	12%	11%

Refineries, Health and Climate Change

Health

THE EMISSIONS RELEASED DURING REFINERY ACCIDENTS include chemicals known to harm human health. Air sampling by both the community members and the Department of Environmental Quality have detected these chemicals in refinery neighborhoods.

CHEMICAL	HEALTH IMPACT
Sulfur Dioxide, Nitrogen Oxide	Attacks the respiratory system
Benzene	Carcinogen
Hydrogen Sulfide	Eye irritation, bronchitis, affects the nervous system
Ozone	Creates smog and makes breathing difficult for people who are sensitive to it
Carbon Monoxide	Can cause heart problems—low level exposure may cause chest pain and reduce ability to exercise
Particulate Matter	Can cause breathing problems and premature death

Health symptom surveys conducted in St. Charles Parish and St. Bernard Parish revealed that refinery neighbors experience the adverse symptoms of chemical exposure. Below are the results of a health symptom survey next to ExxonMobil’s Chalmette Refining in St. Bernard Parish.

The subject of health is one on which refinery managers usually disagree with the Louisiana residents who are impacted by the emissions. This is all the more reason why it’s important to act on the areas on which we can agree. Accidents are bad for everyone.

Climate Change

Refineries emit greenhouse gases during accidents, including carbon dioxide, methane, and

nitrous oxide. The Environmental Integrity Project estimates that oil refineries, along with chemical plants constitute the second largest stationary source of greenhouse gases.

“However, other estimates of U.S. greenhouse gas emissions demonstrate that petroleum refineries play a key role in climate changepetroleum refineries are responsible for about 14.3 percent of industrial emissions and about 4 percent of U.S. emissions of CO2 from fossil fuel combustion. Moreover, if left unregulated, refinery CO2 emissions are projected to increase rapidly.”¹

Accidents are a significant part of that contribution. Reducing accidents reduces the refineries’ harmful impacts on the climate.

¹ Environmental Integrity Project and the Sierra Club. Comments on Proposed Amendments to the Current Standards of Performance for Petroleum Refineries. p. 6, 8/27/05

Next Steps

UNDERSTANDING THE ACCIDENT RATE is the first step to solving the problem. Refinery communities are working together to reduce the accident rate statewide. Part of the Refinery Efficiency Initiative is inviting refinery personnel to collaborate on the project. Refinery personnel are ultimately the people who can solve this problem and are encouraged and invited to participate in all of the next steps.

Next steps include:

- Stakeholder Roundtable on Accidents
- Technical review of common problems and solutions
- Implementation of solutions

The Refinery Efficiency Initiative is a sincere effort to reduce accidents and help all parties concerned. Reducing accidents is good for refineries and for the people of Louisiana.

Acknowledgements

Produced by Communities Empowered for Change (Baton Rouge), Concerned Citizens Around Murphy (Meraux), Residents for Air Neutralization (Shreveport), St. Bernard Citizens for Environmental Quality (Chalmette), Starr Terrace Neighborhood Association (Mt. Airy) and the Louisiana Bucket Brigade.

Research managed by Anna Hrybyk. Significant research was conducted by Eric Parrie, to whom special thanks are due. Additional research conducted by Kate Trotter, Amber Rembert, Anna Hrybyk, Anne Rolfes, Grace Morris, Francie Rose and law students from Berry University and the Student Hurricane Network.

Written by Anne Rolfes

Edited by Anna Hrybyk, Eric Parrie, Kelly Haragan

Maps created by Randy Caruso.

Thanks to the Environmental Working Group and funded by the Ben and Jerry's Foundation, the U.S. Environmental Protection Agency's Office of Environmental Justice—Environmental Justice Small Grants Program and Louisiana Bucket Brigade members.

