

Evaluation of LA's Chemical Release Incidents (2020-2023)
Performed in Support of
2025 Proposed Fenceline Air Monitoring Legislation
September 29, 2024

Fenceline Monitoring Workgroup Technical Team
Vickie Boothe, Rosane McGowan, Greg Gasperecz, Scott Eustis

LA's "Most Serious" Chemical Release Incidents (2020 – 2023)

❑ "Most Serious" Chemical Release Incidents involving:

- Reported Deaths
- Injuries
- Evacuation Orders
- Shelter-In-Place Orders

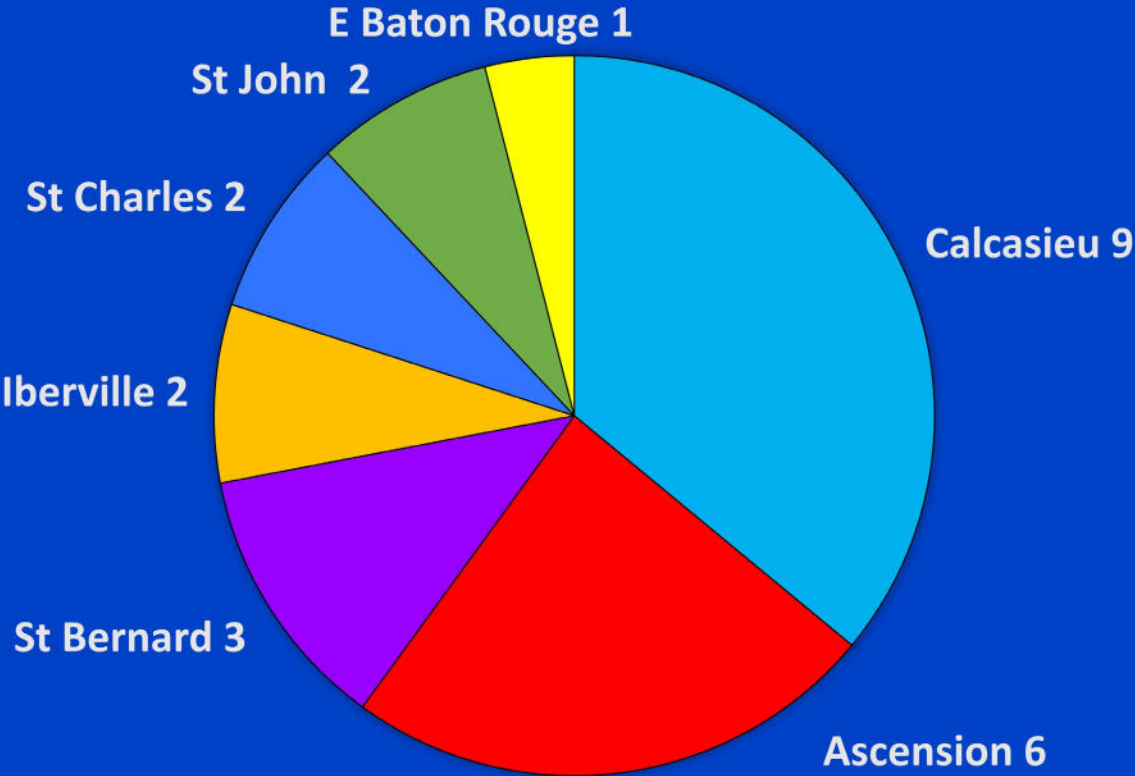
❑ Proposed 2025 legislation

- Real-time Fenceline Monitoring & Alert System
 - 17 highest risk pollutants
 - 96 chemical manufacturing facilities
 - 19 petroleum refineries

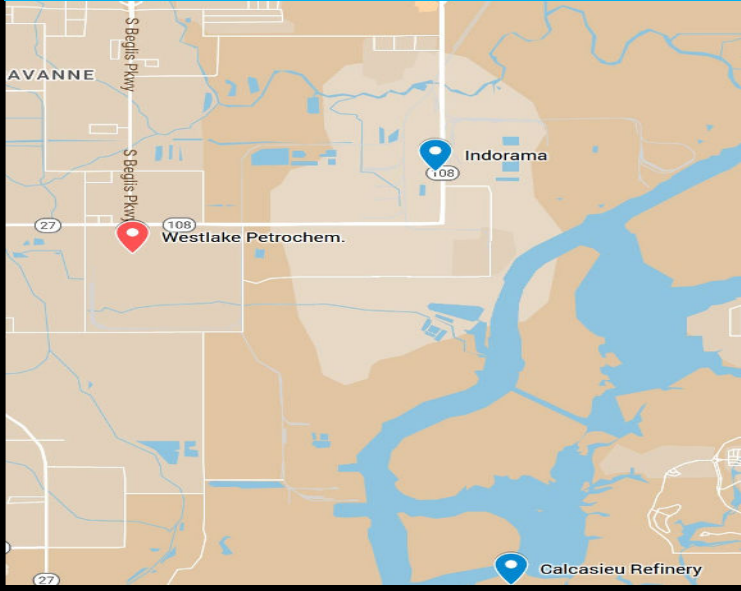


Summary Results

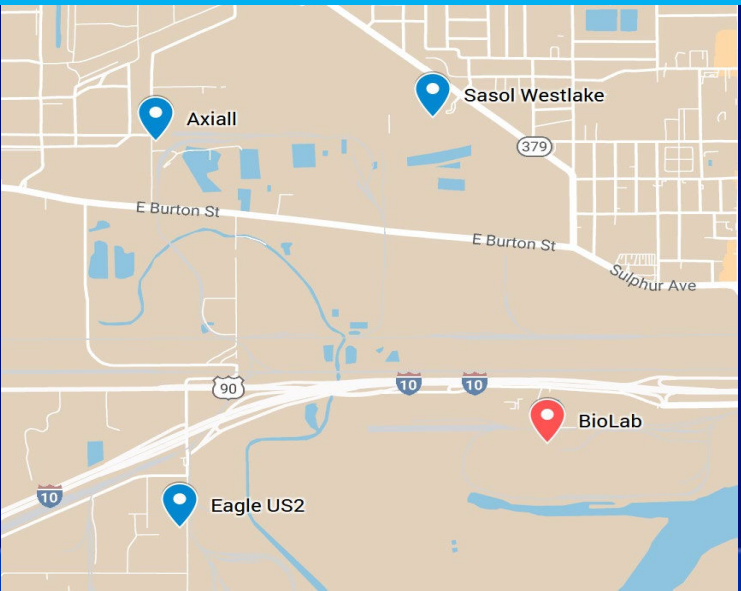
Number of Incidents by Parish (01/20 – 12/23)



South of I-10



North of & Near I-10



Westlake Petrochemical, Sulphur, LA: Two 2021 Fires (06/25 & 09/27)

6/25 lube oil fire. 9/27 6 Workers Hospitalized in Flashfire



6/25 "No offsite impact. Fire & black smoke is just from flares." Parish EMS, 9/27 ethylene cracker unit fire 1 worker w/2nd degree burns, broken leg, pelvis filed lawsuit. NO LDEQ records of either fire.

Calcasieu Refining, 14-Hr Naptha Tank Fire 06/03/2023

5 workers injured, >12,100 evacuated, >33,000 sheltered in place (13 hours)



Lightening caused 13-hr release of 10,250 lbs of benzene* (50% of annual emissions), >163 tons of PM2.5 (100% of annual emissions). Air monitoring, "so far finding non-detect readings", Langley said.

06/10/2022 Indorama 5-Hr Pyronaptha Spill, Non-essential workers evacuated; Hwy 108 closed; benzene detected offsite. 08/24/2022 Boiler Fail On-going Flaring for weeks.



"A toxic dragon is what it was -- just puffing toxic smoke and fire," **James Hiatt**, director of For a Better Bayou, said of the flare at the Indorama plastics plant in Westlake, Louisiana, that rattled the windows of local homes.

Spill:137 lbs benzene; Flaring: 287lbs 1,3-butadiene 358lbs benzene. LDEQ Consent Agreement Still Ongoing

Potential Health Effects

PM2.5 Causes:

- ❑ ~8.9 million deaths/year worldwide
 - Cardiovascular & respiratory disease, lung cancer
- ❑ Onset, exacerbations of heart disease, stroke, asthma
- ❑ Likely causes Alzheimer's, autism, birth defects, diabetes

Benzene Health Effects:

- ❑ Acute exposure:
 - Dizziness, nausea, headache, convulsions, coma
- ❑ Chronic exposure:
 - Leukemia, anemia, adverse reproductive outcomes



BioLab Westlake Fire, 50-Hr Chlorine Leak & Fire, 08/27/2020

>36,000 Residents ordered to Shelter in Place (28 Hrs)



450,000 lbs (22 x annual emissions) chlorine released. EPA detected chlorine in 9 neighborhoods, 2 violated regulation limits.
LDEQ Langely, EPA's plane "did not register any significant hits. He was unaware of the EPA ground-level monitoring.

BioLab Westlake 3-Hr Chlorine Leak 03/22/2023

> 10,000 Residents Sheltered in Place



9:20am process upset released 817 lbs of chlorine, 247 lbs ammonia in 3 hrs. Phillips 66 reported cloud. BioLab waited >24 hrs to report. LDEQ, "We didn't get any readings ...in the range of being harmful to human health."

Biolab 07/02/2024



📷 A smoke cloud pours out of the Bio-Lab chlorine products warehouse in Westlake, where local and state officials confirmed a fire started Wednesday morning, July 2, 2024. (Photo courtesy of Chad Moreno)



BIOLAB EMERGENCY
SHELTER IN PLACE LIFTED

No information on chemicals or quantities released in LDEQ EDMS

Sasol Westlake Explosion, 2-Hr Fire (10/15/2022)

Office of Homeland Security Ordered >1700 Residents to Shelter-In-Place Houston River Rd Closed



17,596 lbs Aluminum Triethyl (ATE), a napalm alternative, released in 2 hrs. Sasol, "There were no off-site impacts and no call to action for the nearby community." LDEQ 10/15 Report, "Off-site impact was smoke."

Axiall Westlake, Lake Charles 105-Minute Vinyl Chloride Leak, 12/14/21

17,500 Residents, Students at 3 Schools within 3 Miles Likely Exposed



Equipment leak caused 105-minute release of 14,800 lbs of Vinyl Chloride (3 x annual emissions.) Axiall and nearby Sasol workers ordered to Shelter-In-Place. Axiall, LDEQ Responder provided NO INFO to local schools, residents, or public.

Eagle US2 (Westlake South), Explosion & 2-Hr Fire 01/27/2022

5 Workers Hospitalized, 7,000 Sulphur & Westlake Students Sheltered-In-Place



>103,000 lbs HCL in 2 hrs. Westlake spokesperson, "No offsite impact" false report, detected 3.1ppm VOCs at fenceline.

02/10/2022 Eagle US2 (Westlake S.) 13-Hr Power Fail, 12/11/2022 Valve Leak *Workers and 9,435 residents within 3 miles evacuated on 2/10*



VINYL CHLORIDE: THE POISON THAT MAKES THE PLASTIC

*Considerations for the EPA's Evaluation of Vinyl
Chloride Under the Toxic Substances Control Act*

JULY 2024



BEYOND PLASTICS

EARTHJUSTICE

Toxic-Free
FUTURE

**13 hr Power fail: 2,053lbs vinyl chloride*, 15 hr Open Valve 11,759lbs vinyl chloride. Total vinyl chloride 13,812lbs
(2.6 times annual emissions). No public notification of 12/11 release.**

Eagle US2 (Westlake S.) & Axiall Release Health Effects

Vinyl Chloride

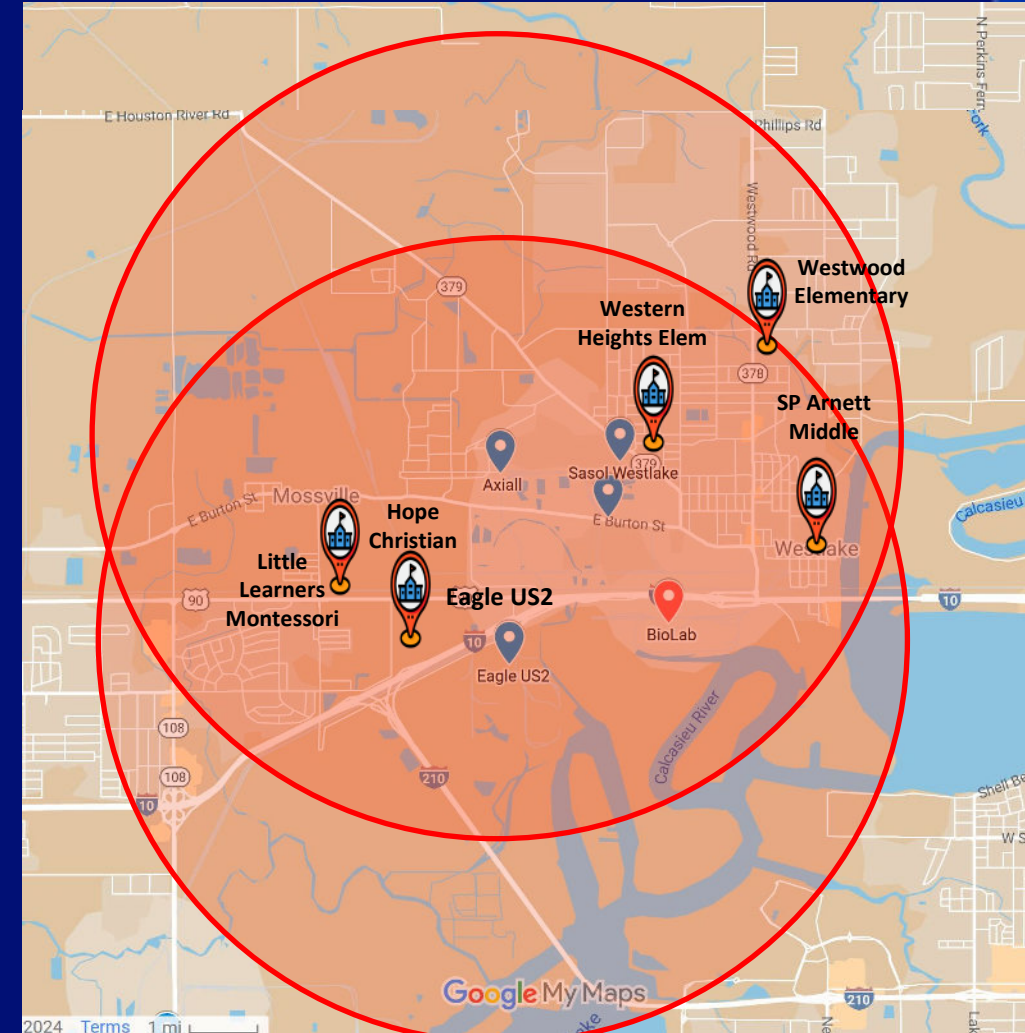
- ❑ **Acute exposure:**
 - Dizziness, drowsiness, headache, loss of consciousness.
- ❑ **Chronic exposure:**
 - Liver, lung, breast, & brain cancer; leukemia.

Hydrochloric Acid

- ❑ **Acute exposure**
 - Coughing, respiratory tract inflammation, chest pain.
- ❑ **Chronic exposure:**
 - Gastritis, chronic bronchitis, dermatitis.

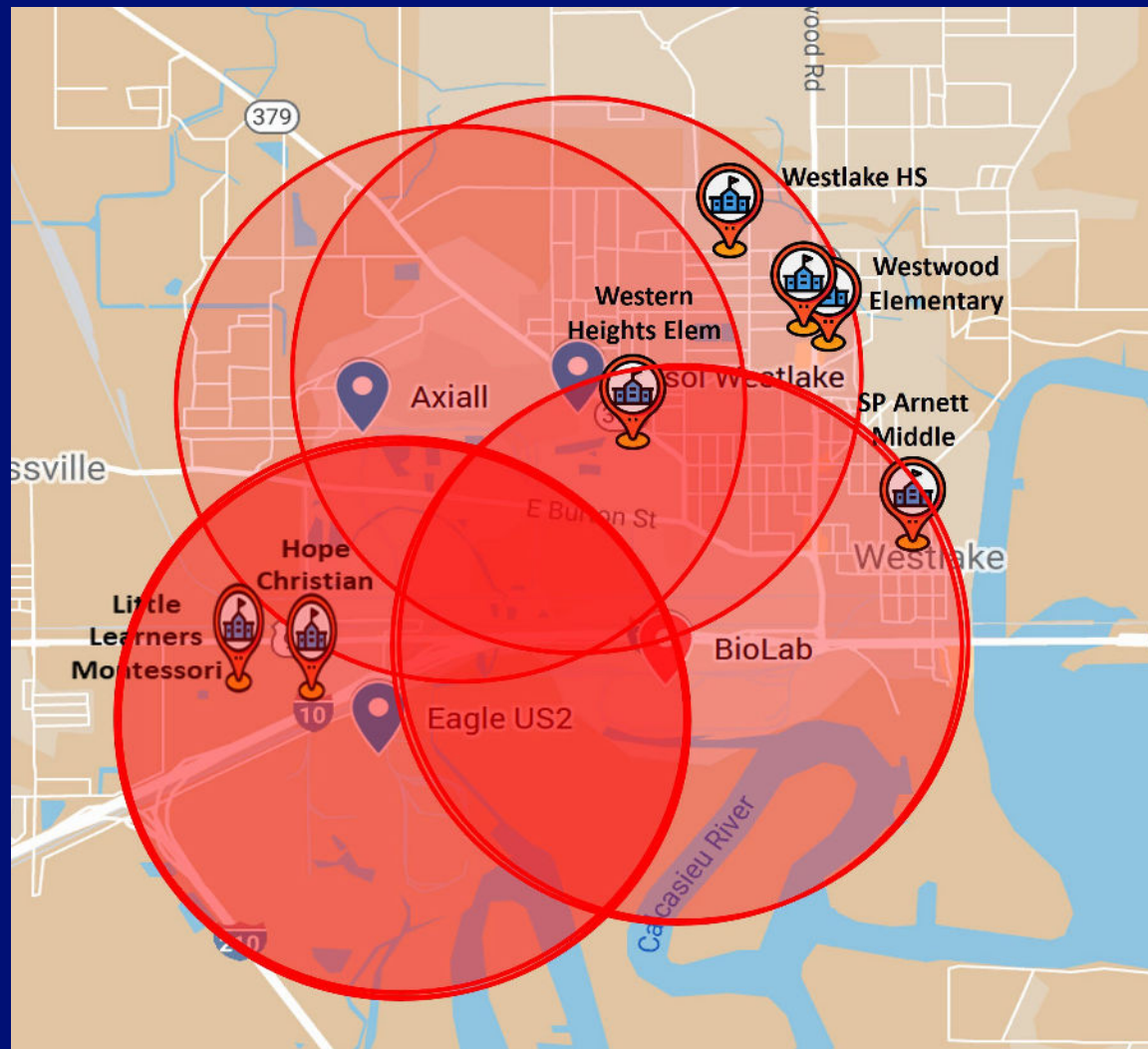
Chlorine

- ❑ **Acute exposure**
 - Coughing, respiratory tract inflammation, chest pain.
- ❑ **Chronic exposure:**
 - Flu-like symptoms, reactive airways dysfunction syndrome (RADS).
- ❑ ***Children most vulnerable due to developing brains, lungs, neurological systems.***



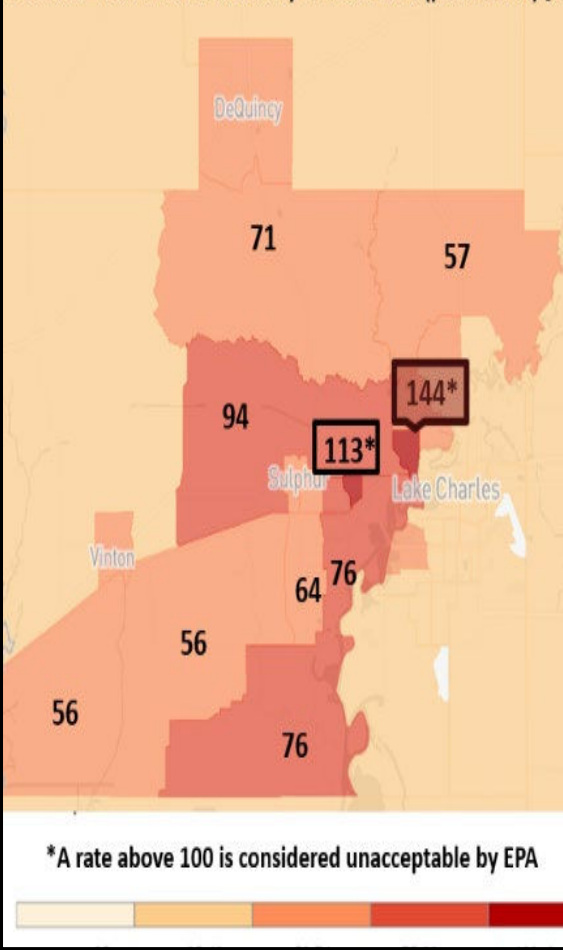
Residents, schools within 1-mile of serious chemical release sources.

- ❑ Vinyl Chloride
- ❑ Hydrochloric Acid
- ❑ Chlorine
- ❑ Ammonia
- ❑ ATE (napalm alternative)
- ❑ PM2.5



EPA 2014 Air Toxics Assessments Louisiana Risk Drivers

2014 Air Toxics Cancer Risks by Census Tract (per million) [1]



Tract 26

Cancer risk:

144 per million

(National average: 32)

Pollutant Risk

58% Ethylene Oxide

17% Formaldehyde

11% Hydrazine

Tract 31.02

Cancer risk:

113 per million

(National average: 32)

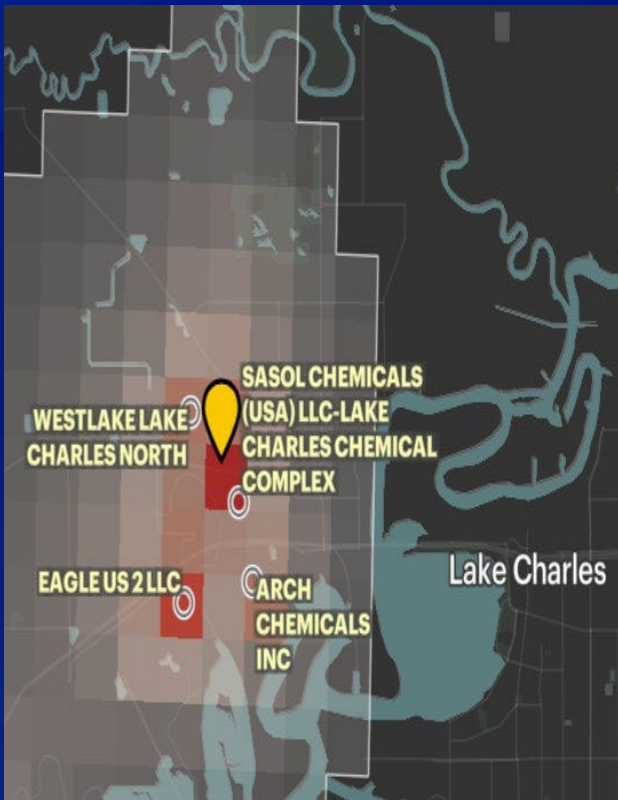
Pollutant Risk

53% Ethylene Oxide

24% Formaldehyde

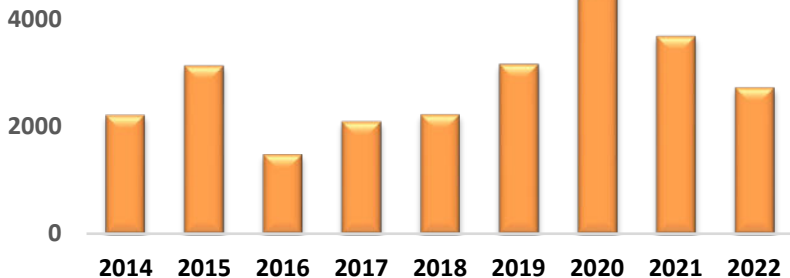
3% Acetaldehyde

3% 1,2-Dichloroethane



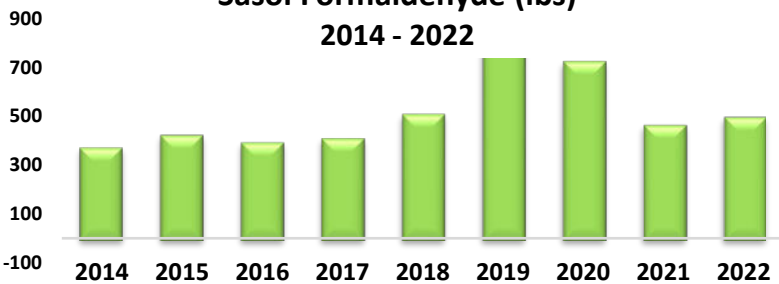
Sasol Ethylene Oxide (lbs)

2014 - 2022



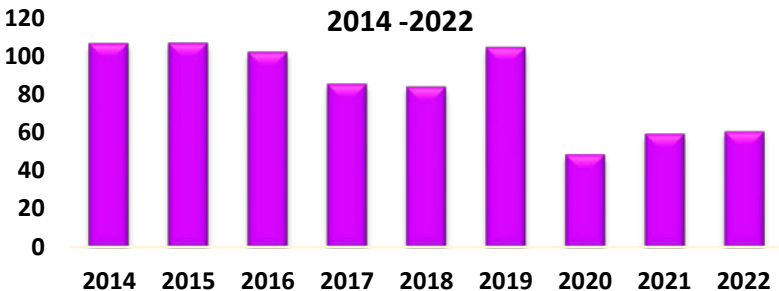
Sasol Formaldehyde (lbs)

2014 - 2022



Arch Chemicals Hydrazine (lbs)

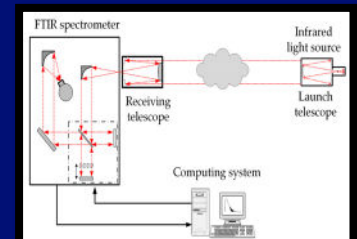
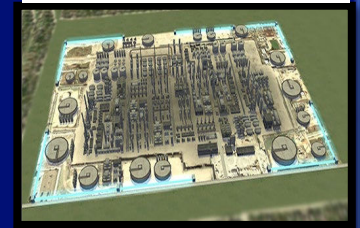
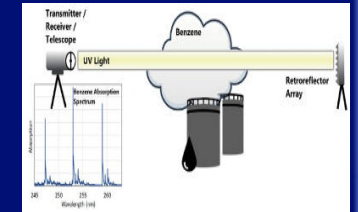
2014 - 2022



EPA-Recommended Real-time Fenceline Monitors for Refineries

- ❑ **UV Differential Optical Absorption Spectroscopy (UV-DOAS)**
 - Uses ultraviolet light beam to detect pollutants (up to 500 m)
 - Capable of simultaneously measuring **20 pollutants**
 - Average Costs \$250,000 Capital, \$25,000 Annual*
 - 4 beam-detector systems, 4 equipment shelters, alert system

- ❑ **Open-Path Fourier Transform Infrared Spectroscopy (OP-FTIR)**
 - Uses infrared light beam across an open path (400 – 500 m)
 - Capable of simultaneously measuring **> 100 pollutants**
 - Cons: **Low benzene sensitivity, not recommended for refineries**
 - Average Costs \$320,000 - \$500,000 Capital, \$24,000 Annual*
 - 4 FTIR monitors, 4 equipment shelters, alert system

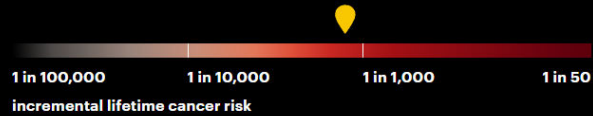


EXTRA SLIDES

← Part of a hot spot around Westlake, Louisiana

This location has an estimated excess lifetime cancer risk from industrial sources of about

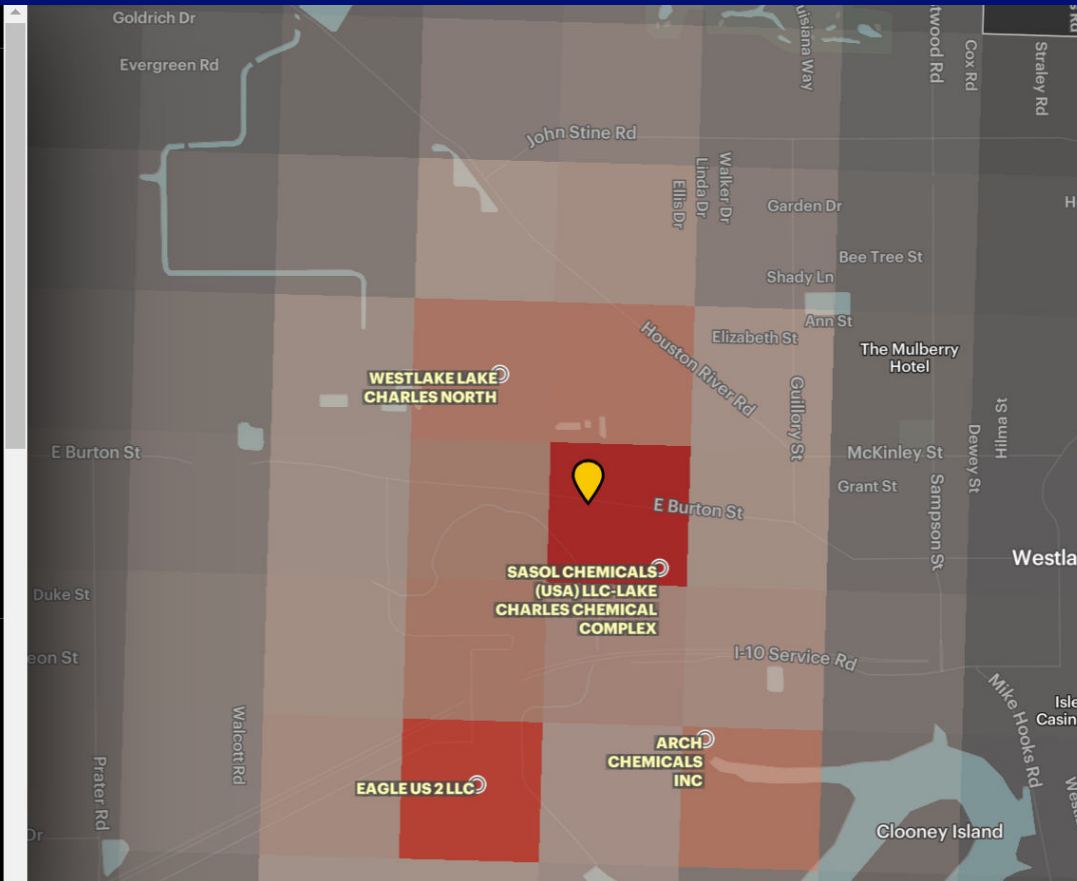
1 in 1,300, or 7.8 times the EPA's acceptable risk.



Emissions from nearby facilities add an estimated **1 in 1,300** excess lifetime cancer risk here 📍, according to a ProPublica analysis of five years of EPA modeling. Our map is a screening tool that indicates areas of potential concern. It is not a site-specific risk assessment, and cannot be used to tie individual cancer cases to emissions from specific industrial facilities. [So, what does this mean for me?](#)

Over the five years ProPublica analyzed, the excess risk here has ranged from as low as 1 in 3,200 to as high as 1 in 600. In 2018, the risk was 1 in 1,700.

Risk over time



SASOL CHEMICALS (USA) LLC-LAKE CHARLES CHEMICAL COMPLEX

Contributes about **80.6%** of the estimated excess cancer risk here

Emits **Ethylene oxide, Benzene, Butadiene, 1,3-** and **7 more carcinogens.**

Note: The EPA's reporting system does not allow facilities to distinguish between hexavalent and trivalent chromium. Hexavalent chromium is a known carcinogen, whereas trivalent chromium is not. The cancer risk associated with all facilities that report chromium compounds may be inaccurate. To learn more, read our [methodology](#).

[Jump to this facility →](#)

PHILLIPS 66 LAKE CHARLES REFINERY

Contributes about **16.7%** of the estimated excess cancer risk here

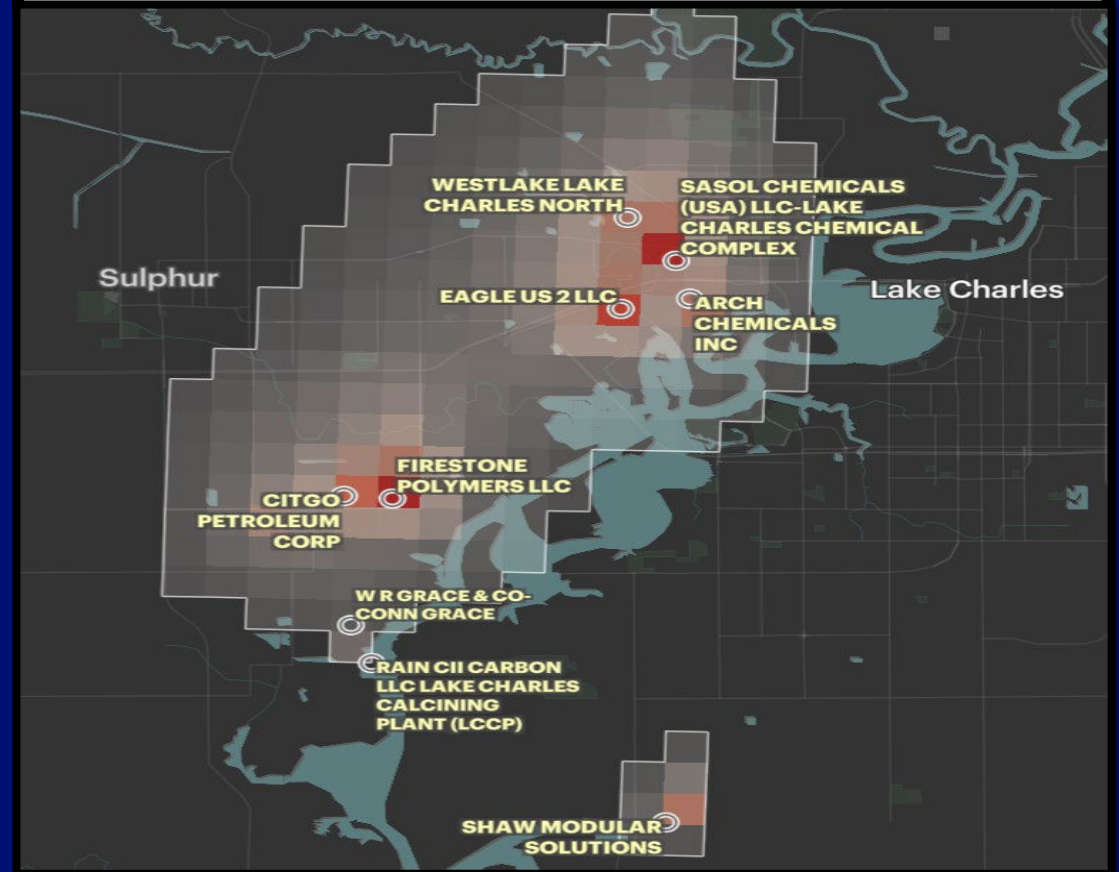
Emits **Benzene, Nickel compounds, Polycyclic aromatic compounds** and **7 more carcinogens.**

Calcasieu Parish Facilities: Highest PM_{2.5} Emissions & Air Toxics Risks

Calcasieu Parish Top 10 2021 PM_{2.5} Emitting Facilities [11]

Facility Name	2021 PM _{2.5} (tons)
Citgo Petroleum Corp - Lake Charles Manufacturing Complex*	451
Eagle US 2 LLC - Lake Charles Complex*	264
Entergy Louisiana LLC - Roy S Nelson Coal-fired Power Plant	205
Sasol North America Inc - Lake Charles Chemical Complex*	203
Phillips 66 Co - Lake Charles Refinery	165
WR Grace & Co - Conn Grace*	150
Entergy LA LLC - Nelson Industrial Steam Co (NISCO)	146
PPG Industries Inc - Silica Plant	94
Louisiana Integrated Polyethylene JV LLC	91
Lake Charles Calcining Plant*	76
TOTAL	1,845
<i>*Highest Air Toxics Risks</i>	

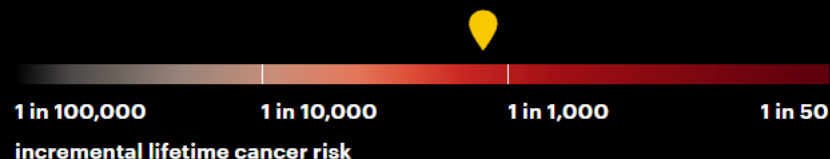
2014 Calcasieu Parish Facilities Highest Air Toxics Risks [12]



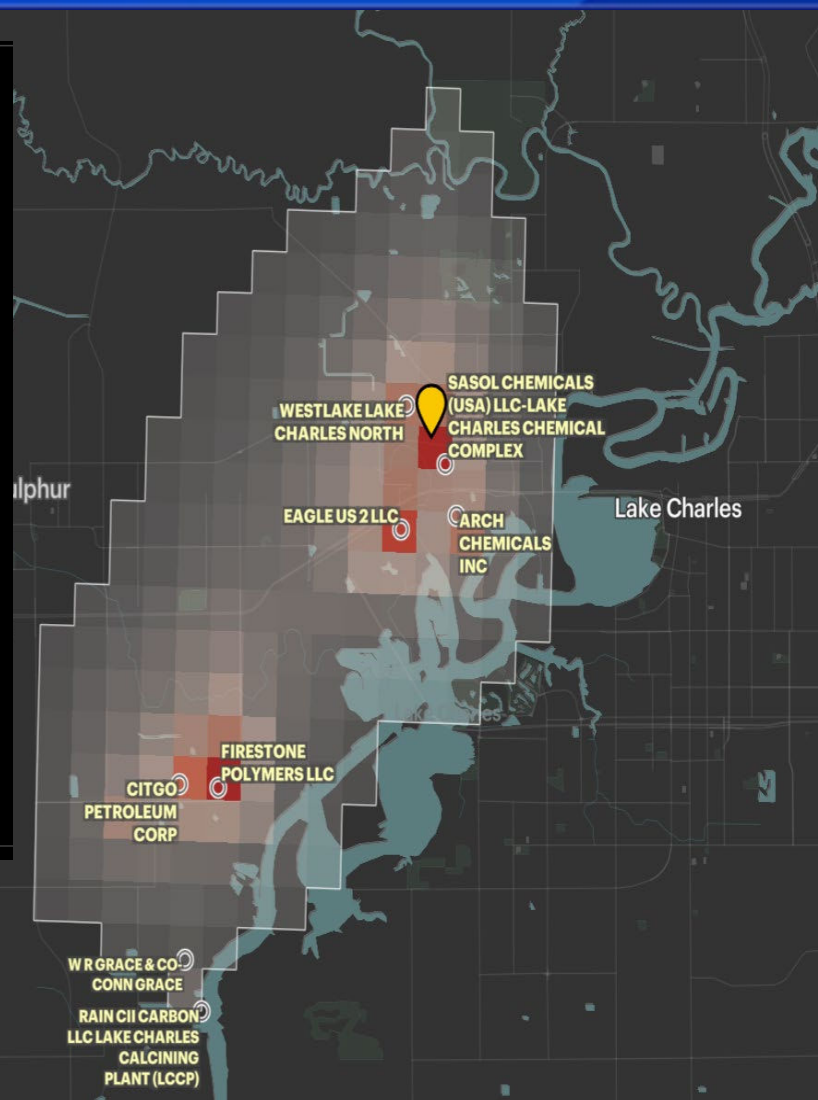
***Half (50%) of top PM_{2.5} emitting facilities also drive highest air toxics cancer risks**

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Facility Name and Frequency of Incidents (8/27/20 – 8/24/23)

Facility Name	# Incidents	Parish
Honeywell International Inc - Geismar Complex	3	Ascension
Westlake Petrochemicals LLC - Poly III	2	Calcasieu
Bio-Lab Inc, A KIK Custom Product Company	2	Calcasieu
International Matex Tank Terminals - St Rose Terminal	2	St Charles
Marathon Petroleum Co LP Garyville Refinery	2	St John
Chalmette Refining LLC - Chalmette Refinery	2	St Bernard
Blue Cube Operations LLC (Olin)	1	Iberville
Indorama Ventures Olefins LLC - Lake Charles Facility	1	Calcasieu
Axiall LLC - Westlake Lake Charles North	1	Calcasieu
PCS Nitrogen Fertilizer LP - Geismar Agricultural Nitrogen & Phosphate Plant	1	Ascension
Calcasieu Refining Company	1	Calcasieu
Sasol North America Inc - Lake Charles Chemical Complex	1	Calcasieu
CF Industries Nitrogen LLC - Donaldsonville Nitrogen Complex	1	Ascension
BASF Corp - Geismar Site	1	Ascension
The Dow Chemical Co - Louisiana Operations	1	Iberville
Eco Services Operations LLC - Sulfuric Acid Plant	1	E Baton Rouge
Eagle US 2 LLC - Lake Charles Complex	1	Calcasieu
Valero Refining - Meraux LLC - Meraux Refinery	1	St. Bernard