

## 56 Refineries with Benzene Readings at the Fenceline above the Potential Health Threat Level in 2021

Facility	City	State	Average of Highest 2-Week Values (micrograms per cubic meter)					Percent over Potential Threat Level for 2021 Annual Average (3 micrograms/cubic meter)
			2018 Annual Average	2019 Annual Average	2020 Annual Average	2021 Annual Average	Long-term Average (2018-2021)*	
Marathon Galveston Bay Texas City <sup>1</sup>	Texas City	TX	15.6	21.7	19.6	37.8	23.8	1160%
Philadelphia Energy Solutions	Philadelphia	PA	19.6	50.4	28.2	19.2	29.6	540%
Total Refinery Port Arthur	Port Arthur	TX	28.2	17.6	17.6	18.9	20.5	529%
Houston Refining LP <sup>1</sup>	Houston	TX	11.0	10.9	18.2	16.9	14.3	462%
Valero St Charles Norco	Norco	LA	2.9	3.1	3.7	14.7	6.4	390%
Valero Texas City <sup>1</sup>	Texas City	TX	9.7	10.9	7.3	14.7	10.6	389%
Shell Norco Manufacturing Complex	Norco	LA	8.9	9.2	15.2	14.4	12.0	381%
Chalmette Refining	Chalmette	LA	14.9	15.6	11.7	12.6	13.7	318%
Pasadena Refining <sup>1</sup>	Pasadena	TX	20.2	31.3	8.5	12.2	18.0	307%
Countrymark Refining and Logistics	Mt Vernon	IN	5.0	5.9	6.4	12.1	7.4	303%
Flint Hills Resources Corpus Christi East Refinery	Corpus Christi	TX	15.4	14.3	7.3	11.0	11.9	267%
Phillips 66 Lake Charles Westlake	Westlake	LA	5.6	6.8	11.5	11.0	8.7	265%
Valero Corpus Christi West <sup>1</sup>	Corpus Christi	TX	13.7	10.8	6.2	10.6	10.2	255%
CITGO Corpus Christi East	Corpus Christi	TX	6.5	11.0	11.9	9.8	9.8	227%
Limetree Bay Terminals Christianstead*	Christianstead	VI	-	3.05	3.8	9.5	5.6	218%
Phillips 66 Bayway Rahway River Linden	Linden	NJ	2.4	2.1	1.9	9.5	4.0	217%

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HF Artesia	Artesia	NM	325.0	26.8	12.7	9.4	86.0	212%
Toledo Refining Oregon	Oregon	OH	8.6	8.1	7.7	9.2	8.5	208%
Flint Hills Resources Corpus Christi West Refinery*	Corpus Christi	TX	-	8.1	7.5	9.2	8.3	206%
ExxonMobil Baytown	Baytown	TX	6.3	5.7	4.9	8.9	6.5	197%
Valero Corpus Christi East <sup>1</sup>	Corpus Christi	TX	44.9	33.6	26.0	8.8	28.0	192%
CITGO LCMC Westlake	Westlake	LA	6.9	7.1	8.5	8.5	7.8	182%
Deer Park Refinery	Deer Park	TX	15.7	11.0	8.6	8.1	10.7	169%
CITGO Corpus Christi West	Corpus Christi	TX	4.3	4.7	5.1	7.5	5.4	150%
Kinder Morgan Galena Park	Galena Park	TX	7.3	9.5	7.6	7.3	8.1	142%
CITGO Petroleum Corporation	Lemont	IL	5.5	7.4	7.1	7.1	6.8	135%
ExxonMobil Baton Rouge <sup>1</sup>	Baton Rouge	LA	7.5	11.6	7.5	6.9	8.4	129%
HF Lovington	Lovington	NM	7.3	5.8	14.0	6.7	8.4	124%
Calumet Shreveport	Shreveport	LA	5.7	5.8	7.2	6.7	6.4	123%
Chevron Pascagoula	Pascagoula	MS	12.2	15.4	8.4	6.6	10.6	118%
ExxonMobil Beaumont Refinery	Beaumont	TX	7.7	5.5	5.8	6.4	6.4	114%
Phillips 66 Borger JTF	Borger	TX	2.5	3.0	1.5	6.4	3.3	114%
Valero Port Arthur <sup>1</sup>	Port Arthur	TX	8.5	14.6	4.8	6.4	8.6	112%
Valero Three Rivers <sup>1</sup>	Three Rivers	TX	6.4	6.0	5.5	6.2	6.0	108%
Motiva Port Arthur Refinery	Port Arthur	TX	3.7	8.7	3.8	6.1	5.6	103%
Valero Memphis	Memphis	TN	5.5	6.7	7.3	5.9	6.4	95%
Phillips 66 Alliance Belle Chasse	Belle Chasse	LA	10.0	8.2	10.5	5.8	8.6	93%
Delek Krotz Springs*	Krotz Springs	LA	-	25.7	31.6	5.7	20.9	89%

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Shell Chemical Mobile	Saraland	AL	8.6	9.2	20.3	5.7	11.1	89%
HF Woods Cross	West Bountiful	UT	3.5	3.7	5.6	5.6	4.6	87%
Big West Oil North Salt Lake	North Salt Lake	UT	6.6	5.6	6.0	5.6	5.9	87%
Phillips 66 Wood River Docks	Roxana	IL	5.9	12.1	5.8	5.0	7.0	68%
Placid Refining Port Allen	Port Allen	LA	8.9	5.1	4.5	4.9	5.8	64%
Delek El Dorado*	El Dorado	AR	-	10.8	3.8	4.6	6.3	54%
Hunt Sandersville Heidelberg	Sandersville	MS	5.9	4.4	4.6	4.6	4.8	54%
Delek Big Spring	Big Spring	TX	5.5	4.8	5.8	4.6	5.2	52%
Flint Hills Resources Corpus Christi Mid Terminal	Corpus Christi	TX	3.3	3.3	3.2	4.4	3.6	48%
Magellan Processing Corpus Christi	Corpus Christi	TX	7.7	6.5	3.7	4.4	5.6	47%
Marathon Robinson	Robinson	IL	3.6	3.9	3.6	4.4	3.9	47%
Valero McKee	Sunray	TX	4.6	4.2	4.1	4.4	4.3	46%
Par Hawaii East	Kapolei	HI	6.2	6.5	5.8	4.3	5.7	44%
Lima Refining Company	Lima	OH	10.3	3.2	3.5	4.2	5.5	39%
Calumet Montana Great Falls	Great Falls	MT	5.8	5.3	3.8	4.0	4.7	33%
Marathon Salt Lake City	Salt Lake City	UT	5.1	3.6	4.0	3.9	4.1	29%
Phillips 66 Sweeny	Old Ocean	TX	5.1	3.0	3.5	3.8	3.8	27%
Valero Houston	Houston	TX	3.8	3.7	3.2	3.3	3.5	10%

\* The “long-term” average spans all the refinery’s reported data starting from 2018. Flint Hills Corpus Christi West, Delek Krotz Springs, Delek El Dorado, and Limetree Bay Terminals Christianstead didn’t start monitoring until 2019.

I. These facilities have Site Specific Monitoring Plans (SSMPs), which allow them make larger downward adjustments based on data that supposedly show that much or most of the high benene levels at particular locations come from neighboring plants.

Notes: The potential health threat level is based on the California Environmental Protection Agency's Office of Environmental Health Hazard Assessment (OEHHA) chronic Reference Exposure Levels (RELs), an estimated concentration at or below which there would likely be no noncancer health effects anticipated for the specified exposure level. This level is 3 micrograms per cubic meter. EIP's analysis is based on the annual average of the highest two-week average fenceline benzene monitoring concentrations per monitoring period reported by refineries to EPA. Refineries where this annual average is above 3 micrograms per cubic meter are flagged as a "potential health threat." The benzene data reported to EPA are limited to concentrations measured at refinery fencelines - actual risk to public health depends on how much and for how long the benzene measured at fencelines drifts into surrounding neighborhoods.

Source: Benzene fenceline concentrations as submitted by industry to EPA.