The Polluter's Playbook

How Loopholes and Lax Enforcement Harm Air Quality in Texas

ENVIRONMENTAL INTEGRITY PROJECT

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THE ENVIRONMENTAL INTEGRITY PROJECT:

The Environmental Integrity Project (EIP) is a nonpartisan, nonprofit organization established in March of 2002 by former EPA enforcement attorneys to advocate for effective enforcement of environmental laws. EIP has three goals: 1) to provide objective analyses of how the failure to enforce or implement environmental laws increases pollution and affects public health; 2) to hold federal and state agencies, as well as individual corporations, accountable for failing to enforce or comply with environmental laws; and 3) to help local communities obtain the protection of environmental laws. For more information on EIP, visit: www.environmentalintegrity.org

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Images: Cover photo by Garth Lenz/ International League of Conservation Photographers of pollution rising behind Deer Park High School east of Houston.

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Executive Summary

Over a six-year period from September 1, 2016, to August 31, 2022, industries in Texas reported 21,769 incidents in which refineries, chemical plants and other facilities released unauthorized air pollution during startups and shutdowns, maintenance activity, breakdowns, and other accidents or "upsets." Broadly called unexpected "emissions events," these unpermitted air pollution incidents released at least 409,575 tons of air pollution over this six-year period. This did not represent all the illegal air pollution released by industry over this period – only the unpermitted amounts resulting from leaks, malfunctions, accidents, and similar kinds of non-routine operation reported by industry to the state as being allegedly uncontrollable.[1] These emission events are illegal because uncontrolled or under-controlled emission spikes present a threat to public health and are not authorized by Clean Air Act permits issued by the Texas Commission on Environmental Quality (TCEQ).

Texas tracks enforcement data on a fiscal year that runs through August 31. During the last six fiscal years, TCEQ designated one half of one percent of these reported unexpected emissions events (119 out of 21,769) to be "excessive," meaning that the state required the companies to perform analyses to determine the cause of the problem and to submit plans for preventing future upsets. However, a review of state records indicates that far more than one percent should have qualified as "excessive," triggering the requirement for pollution-control plans. For example, 1,634 unexpected emissions events during this six-year period lasted longer than a week. That's more than 11 times the number deemed "excessive" by the state. By any reasonable measure, illegal pollution releases lasting more than a week are "excessive."

Smoke billows from a fire and explosion at the TPC facility in Port Neches near Houston in November 2019. The lack of penalties and enforcement in Texas increases the risk of accidents and pollution releases because companies have less of a financial incentive to upgrade their plants.

Illegal pollution releases during upsets are ubiquitous in Texas, in part because the TCEQ has been unwilling to require industry to do better. A 2017 report by the Environmental Integrity Project

and Environment Texas found that TCEQ penalizes only about three percent of unexpected emissions events each year.[2] Even in the rare cases in which TCEQ brings an enforcement action, the penalties it imposes are uniformly far below the state-law maximum rate, which itself is significantly lower than the maximum rate under the federal Clean Air Act. Beyond the penalty issue, the agency rarely requires companies to take action to prevent malfunctions from recurring, even when they happen over and over again and release large quantities of pollution.

The impact of this lax enforcement is clear. Year after year, people living in Texas are exposed to tens of millions of pounds of illegal air pollution during thousands of unexpected emissions events. (For totals in 2022, see Appendix A.) The consequences of pollution from these emissions events in Texas are serious, including premature mortality, healthcare costs, lost productivity, missed school days, birth defects, and psychological trauma.[3] One 2019 study estimated that unexpected emissions events in Texas are responsible for about 42 deaths per year among people 65 years and older and cause $250 million annually in monetized damages.[4]

Who is responsible for this pollution?

Plants that report releasing the most illegal air pollution during unexpected emissions events vary from year to year. But 29 facilities have reported more than 100 over the past six years, with little or no meaningful enforcement from TCEQ. On the following page is a list of the 20 facilities with the most emission events from fiscal year 2017 through fiscal year 2022, according to state data.

Of the 4,394 unexpected emissions events reported by these 20 sources, only four—or less than one tenth of one percent—were designated as "excessive" by TCEQ and therefore required root-cause analyses and cleanup plans. This happened even though the law is clear that illegal pollution releases during emissions events at facilities with an unreasonable number of previous events should be designated "excessive."[5]

WHAT IS AN "EMISSIONS EVENT" IN TEXAS LAW?

This report examines unpermitted industrial air pollution releases during what Texas defines as "emissions events." These sudden bursts of pollution are reported to a state database maintained by the Texas Commission on Environmental Quality and include "any upset event or unscheduled maintenance, startup, or shutdown activity from a common cause that results in unauthorized emissions of air contaminant," according to state law. Even releases of pollution from planned startups, shutdowns, and maintenance activities are considered upsets if emissions exceed the amount of pollution anticipated for the activity by a significant amount due to an unplanned malfunction.

As we explain below, "excessive emissions event" is a legal term which, under Texas code, is meant to be applied to particularly bad pollution releases, as the state determines by a number of factors including their size, frequency, cause, duration, potential impact on human health, and whether the incident is part of a recurring pattern.[6] The "excessive" designation triggers specific requirements aimed at preventing future unexpected emissions events at a problem source.

TABLE 1. WORST 20 REPEAT OFFENDERS FOR UNEXPECTED EMISSIONS EVENTS, FY 2017-2022

Facility	County and Region	Number of Emissions Events	Penalties for Emissions Events Since FY 2017	Pollution released during events, FY2017-2022 (tons)
INV Nylon Chemicals Americas Victoria Site	Victoria (Gulf Coast)	420	$21,575	37
Targa Sand Hills Gas Plant	Crane (West Texas)	412	0	7,373
DCP Midstream Goldsmith Gas Plant	Ector (West Texas)	373	0	3,797
Hess Corp. Seminole Gas Processing Plant	Gaines (West Texas)	315	$33,267	7,530
Targa Wildcat Gas Plant	Winkler (West Texas)	291	0	1,994
DCP Midstream James Lake Gas Plant	Ector (West Texas)	289	$17,039	2,298
Cabot Corp. Emperor Compressor Station	Winkler (West Texas)	237	$1,500	478
Energy Transfer Waha Gas Plant	Pecos (West Texas)	233	0	996
Scout Energy Management Mabee Ranch CO2 Plant	Andrews (West Texas)	207	$1,175	2,739
Dow Chemical Texas Operations Freeport	Brazoria (South of Houston)	171	$16,313	1,297
OXY USA WTP GMK Flare Facility	Gaines (West Texas)	165	0	101
Targa Driver Gas Plant	Midland (West Texas)	159	$19,393	1,919
Enterprise Mont Belvieu Complex	Chambers (E of Houston)	158	$60,751	1,631
Stakeholder Midstream Campo Viejo Gas Processing Plant	Yoakam (West Texas)	154	0	536
Occidental Mallet CO2 Recovery Plant	Hockley (West Texas)	150	$35,758	508
Chevron-Dollarhide Gas Plant	Andrews (West Texas)	148	0	320
OXY USA WTP Welch CO2 Gas Processing Plant	Dawson (West Texas)	133	0	816
Targa Oahu Gas Plant	Pecos (West Texas)	133	0	1,716
Chevron McElroy Section 199 Emergency Flare	Crane (West Texas)	125	0	2,103
Occidental Anton CO2 Re-Injection Facility	Hale (West Texas)	120	$3,938	205

Source: Texas Commission on Environmental Quality and TCEQ STEERS database

While even well-maintained plants malfunction from time to time, frequent breakdowns signal a failure that should be corrected. But too often, Texas fails to provide repeat offenders with a real incentive to fix problems. As a result, the same facilities report dangerous amounts of illegal air pollution during unexpected emissions events repeatedly, year after year. When a plant has what it claims are accidental or unavoidable releases of *significant* amounts of pollution more than 100 times over six years, for example, it is hard to believe that the events are unanticipated or that the facility is well maintained and properly operated. [7] Yet, the TCEQ seldom penalizes these repeat offenders or—just as important — requires them to figure out what is causing the emission events and implement plans for preventing them in the future (a requirement for upset events categorized as "excessive" by the state.)

Why are so many repeat offenders releasing so much pollution? Other reports and studies suggest that Texas's lax approach to enforcement of emission events created a culture of acceptable noncompliance that discourages industry from spending money necessary to prevent breakdowns that result in illegal pollution.[8]

The bigger picture is that TCEQ needs to abandon its currently unworkable and overly complicated system that actually hampers enforcement and get back to the fundamental idea that penalizing polluters discourages illegal pollution. The federal Clean Air Act is designed to hold polluters strictly liable for their pollution. The law does not allow excuses or loopholes of the kinds routinely abused by Texas (such as the state's so-called "affirmative defense," as described below). The Clean Air Act does not establish a rebuttable presumption that polluters are entitled to no penalties, or that pollution is unavoidable. On a practical level, it is unreasonable that TCEQ or any state agency or EPA could comb through thousands of emission event reports every year and decide which ones are legitimate and which could have been prevented.

At the center of Texas's broken system are two policies that weaken the state's enforcement of environmental violations: 1) the "affirmative defense" and 2) the state's designation of unexpected emissions events as "excessive" or "chronic." This report examines these flawed policies and their downstream impacts, including more air pollution and an increased risk of industrial disasters.

1) The Affirmative Defense Loophole

Unauthorized pollution releases, including pollution releases during unexpected emissions events, are illegal. But Texas has established a loophole, called an "affirmative defense," which provides polluters with confidence that they will not be penalized for unexpected emissions events, so long as they are promptly reported to the TCEQ. On paper, polluters should only be allowed to skate by under Texas's affirmative defense if they make eleven different demonstrations required by law. [9] In practice, the TCEQ lacks the resources and the resolve to make sure that polluters claiming the affirmative defense are entitled to it. Thus, despite the TCEQ's promise that this defense would only be narrowly available, the agency grants it as a matter of course. According to an audit performed by a legislative oversight committee called the Texas Sunset Advisory Commission, the TCEQ granted the

affirmative defense in more than 85 percent of cases between 2017 and 2021. And because the state grants it routinely, polluters have learned to claim the defense as a matter of course, even for pollution releases that are obviously ineligible. In this way, the affirmative defense has become a serious impediment to effective enforcement that contributes to a culture of noncompliance in Texas.

2) TCEQ's Authority to Designate Unexpected Emissions Events As "Excessive" or "Chronic"

If the TCEQ designates an emissions event "excessive," the responsible polluter must develop and implement a plan for preventing future illegal pollution releases.[10] If a polluter's proposed fix is insufficient on its face or doesn't work in practice, the TCEQ has authority to require the polluter to find and implement a solution. If repeated excessive emissions events occur at a single source, the TCEQ may designate the source a "chronic" offender, making it more difficult for the operator to receive authorization for expansion projects.[11] Chronic offenders should also face increased penalties for future violations. Texas, however, has not exercised this authority in at least six years.

Not since at least January 1, 2017, has the TCEQ labelled any facilities as chronic excess offenders, even though five plants were responsible for 45 (or almost half) of the "excessive" emissions events designated by the state from FY 2017-2022. The state's failure to use its authority to designate any excessive emissions events at these sources as "chronic" is even more inexplicable, given that they are all located in Houston's Harris County, where ozone levels already fail to comply with federal health-based standards and toxic emissions drive elevated risk rates for cancer and other health problems for neighborhoods along the Houston Ship Channel.

TABLE 2. TOP 5 PLANTS WITH MOST EXCESSIVE EMISSION EVENTS FY 2017-2022

Rank	Facility Name	County	"Excessive" Emissions Events (FY 2017-22)	Total Emissions Events (FY 2017-22)	Pounds Pollution Released During Events	Designated by State as "Chronic" Excess Offender?
1	Chevron Phillips Chemical Cedar Bayou Plant	Harris	12	115	4,400,154	No
2	ExxonMobil Baytown Refinery	Harris	10	83	3,051,466	No
3	Lyondell Houston Refinery	Harris	10	37	1,250,759	No
4	Shell Deer Park Chemicals	Harris	8	68	974,847	No
5	Arkema Crosby Plant	Harris	5	6	86,711	No

Source: TCEQ public records requests and TCEQ STEERS database

Moreover, across the state over this six-year period, industries reported 1,633 upset air pollution events that lasted at least a week or longer. No emissions event should last this long if a source is diligently monitoring for malfunctions and has a plan to fix leaks or other issues promptly. Nonetheless, the TCEQ designated only 27 of these events lasting a week or longer—less than two percent—as excessive and therefore requiring a follow-up analysis by the company and a cleanup plan. The TCEQ must use its authority to require serious offenders to develop and implement effective plans for preventing illegal pollution releases.

3) More Air Pollution Because of Weaker Permits

Under the Clean Air Act, small, or "minor" sources of pollution are subject to far less stringent permitting requirements than large, or "major" sources of pollution. Texas's lax approach to enforcement has contributed to a culture of acceptable noncompliance in which industries claim artificially low permit limits to avoid the more stringent requirements for major sources. When the plants violate those limits, they argue the excess emissions resulted from emissions "upset" events and claim the affirmative defense to escape consequences. In this way, industry avoids pollution reduction requirements necessary to protect public health and may improperly circumvent opportunities for public participation that are required for significant minor and all major projects. This weakening of the permitting process is likely contributing to unhealthy concentrations of sulfur dioxide (SO_2) and ozone pollution in Texas's Permian Basin and to unhealthy levels of ozone and toxic air pollution in the Houston, Galveston, Brazoria severe ozone nonattainment area.[12]

The TCEQ's lax approach to enforcement and the problem of recurring unexpected emissions events also weakens the TCEQ's consideration of possible threats to public health as part of the permitting process. In order to obtain a permit authorizing construction of a new or modified source, an applicant must show that pollution resulting from the project will not harm public health. But the TCEQ's evaluation of potential public health harms related to a project does not consider pollution released during "upset" emissions events. Given the magnitude and number of unexpected emissions events reported in Texas year after year, this blind spot in the TCEQ's permitting process presents a serious threat to people living downwind. Making matters worse, the TCEQ's unwillingness to consider air pollution from upsets as part of the permitting process also skews the agency's evaluation of the cost-effectiveness of top-tier pollution controls. In some cases, like flaring operations in the Permian Basin and Freeport LNG's liquefaction plant discussed below, some of the facilities are authorized as "minor" sources—which are subject to minimal pollution controls—actually emit as much pollution as major sources—which are subject to much more stringent pollution controls—when upset emissions are included.

4) Increased Risk of Industrial Disasters

Increases in the capacity of Texas's oil refining and petrochemical industries have outpaced the construction of new refineries and chemical plants. Instead of building new plants, industry cuts costs by building new capacity into existing infrastructure, constructed long ago. For instance, the first processing units at Motiva's Port Arthur Refinery—now the largest petroleum refinery in North America—were built in 1902. ExxonMobil's Baytown

Refinery—now the second largest refinery in the United States—was built in 1919 and began operation in 1920. TPC—formerly Texas Petrochemicals—has proposed a major expansion of its Houston plant, which the U.S. Department of Defense built in 1943 to produce synthetic rubber for World War II.[13] TPC's expansion project is intended to recover production capacity lost when the company's chemical plant in Port Neches—also built in the 1940's—exploded in 2019. Alarmingly, EPA discovered that maintenance shortcomings have led to the same conditions that led to the Port Neches disaster at TPC's Houston Plant.[14]

Industry's reliance on aging infrastructure to support increased production, storage, and transport of toxic and explosive chemicals presents a significant, underappreciated threat to public safety. Yet, the TCEQ does not directly regulate the maintenance and replacement of aging infrastructure. Instead, the primary state-law incentive for polluters to maintain safe operating conditions at aging facilities comes from the threat of penalties when equipment breaks down, resulting in unauthorized pollution releases. However, this indirect incentive can only be effective if the TCEQ consistently imposes meaningful penalties for illegal pollution releases. Thus, the TCEQ's failure to crack down on emissions also contributes to the risk of industrial disasters in Texas.

Policy Recommendations. The Texas Commission on Environmental Quality should:

- Eliminate its unworkable "affirmative defense," which is not only a loophole allowing polluters to escape penalties for illegal pollution, but also a senseless drain on agency resources that increases public health risks as well as the potential for industrial disasters;
- Penalize polluters more frequently and significantly to provide a real financial incentive for improved maintenance and upkeep, resulting in fewer breakdowns, less pollution, and safer industrial facilities;
- Scrutinize air permit applications to ensure that industry's representations match the size of the facility and how much it would likely emit. When applicants fail to comply with unachievable emission limits taken to avoid "major" source pollution control requirements, TCEQ should penalize them;
- Require facilities to take corrective actions to avoid repeated or serious violations of emission limits caused by equipment malfunctions or sudden startups or shutdowns. TCEQ should stop wasting resources it spends excusing polluters from penalties or exempting them from enforcement actions and focus instead on protecting communities from air pollution released during malfunctions or sudden startups or shutdowns.

The Texas Legislature should:

- Approve the maximum penalty increase proposed in the TCEQ's Sunset Bill; and

- Abolish Texas's affirmative defense for unexpected emissions events.

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How the "Affirmative Defense" Loophole Creates a Culture of Noncompliance

This report examines unpermitted industrial pollution releases during what Texas defines as unexpected "emissions events." These include "[a]ny upset event or unscheduled maintenance, startup, or shutdown activity, from a common cause that results in [an] "unauthorized" pollution release."[15] Even planned startups, shutdowns, and maintenance activities are considered upsets if emissions exceed the amount of pollution anticipated for the activity by a significant amount due to an unplanned malfunction.[16]

Under the system of regulation established by the federal Clean Air Act, sources of pollution are "strictly" liable for unauthorized releases of air pollution. In practical terms, that means authorities do not need to prove that the failure to comply was the violator's fault. The government need only show that a particular source – a refinery or a cement kiln, for example – was subject to a specific emission limit or standard and failed to comply. The resulting enforcement action can require the cleanup of illegal pollution, specific actions to prevent the violations from recurring, and payment of appropriate penalties. States have wide discretion to consider the circumstances of each case, e.g., to decide to reduce or waive penalties if the violations are minor and the violator has moved quickly to fix the problem. But not in Texas. Here, the state has codified an elaborate and unworkable process to shield polluters from penalties for illegal pollution releases during unexpected emissions events. At the heart of this process is Texas's so-called "affirmative defense." This process is a failure and Texas should return to the more simple and protective strict liability process established by the federal Clean Air Act. While polluters often loudly complain about regulatory burdens and penalties, there is no evidence that the federal Clean Air Act's strict liability enforcement structure is a burden on good industrial actors or that it is slowing economic development.

In legalese, an "affirmative defense" is a mitigating circumstance recognized by law, which, if proven, will reduce or remove punishment for illegal conduct. The TCEQ's affirmative defense – which is not allowed in the Clean Air Act -- provides that an operator should not be penalized for unauthorized pollution releases during an emissions event if the operator proves, among other things, that:

- The pollution release was beyond the control of the operator and it could not have been avoided or mitigated by better operation or maintenance;
- All possible steps were taken to mitigate air quality impacts of the illegal pollution;
- The illegal emissions were not part of a recurring pattern indicative of inadequate design, operation, or maintenance; and

- That unauthorized pollution did not cause or contribute to an exceedance of any federal health and welfare-based National Ambient Air Quality Standards (NAAQS).[17]

The problem is that Texas does not have the resources or the resolve to properly vet claims of the affirmative defense. Amassing a staff of experienced employees capable of accurately and thoroughly reviewing the facts and circumstances (more than 20,000 times in six years) to figure out if the affirmative defense is warranted would require a significant and completely unwarranted expansion of the TCEQ, which the agency cannot afford. And the TCEQ has not even taken preliminary steps necessary to make the process workable. For example, while the affirmative defense was established in 2003, twenty years later the TCEQ has "acknowledged the absence of sufficient guidelines to make affirmative defense determinations consistently."[18]

The TCEQ understands that a broad affirmative defense interferes with the protection of public health and the environment by shielding polluters from penalties for illegal pollution. Thus, when the legality of the affirmative defense was challenged in court, Texas argued that the defense was a "narrow" one that would only be available to operators who satisfied a "high burden" and made *all* demonstrations required by rule.[19] In practice, neither of these representations is true. The Texas Sunset Advisory Commission determined that the TCEQ granted the affirmative defense between 85.9 and 89.3 percent of the time it was claimed each year from 2017 through 2021.[20] The Sunset Commission's report states that "data on the frequency of approval of this defense over time suggests the absence of clear guidance may have led [TCEQ] staff to over-approve the affirmative defense when evaluating emissions events."[21] This is consistent with EIP and Environment Texas's determination in previous years that the TCEQ only imposes penalties for approximately three percent of reported unexpected emissions events.[22] In response to recent criticism that it too frequently grants the affirmative defense, the TCEQ agreed to issue guidance for staff evaluations of affirmative defense requests and to establish a centralized committee of agency staff to review and approve affirmative defense applications.[23]

But these measures are not enough. The affirmative defense itself is a bad idea, and an unnecessary one. Even under the Clean Air Act's strict liability enforcement process courts, EPA, and state agencies like the TCEQ have always had discretion to take into account a violator's good conduct and cooperation, its clean record of consistent compliance, the minor nature of a violation, and other similar factors when deciding whether or how harshly to penalize an operator for an illegal pollution release.

Proper implementation of the "narrow" affirmative defense is simply unworkable and unwarranted. In practice, the affirmative defense isn't just unhelpful, it's very dangerous. Where a strict liability system provides industry with a strong incentive to prevent unexpected emissions events, Texas's exceedingly broad affirmative defense gives polluters confidence that they will not be punished for unauthorized pollution releases during emissions events. This creates an incentive for polluters *not* to invest in measures necessary to prevent breakdowns that lead to significant unauthorized pollution releases. This

incentive works against the public interest and should be eliminated. Additionally, the affirmative defense is only available for unexpected emissions events. It is not available for other kinds of violations, such as the failure to obtain a permit or the failure to comply with permit limits during routine operation. Texas's practice of granting the affirmative defense 85% of the time encourages industry to mischaracterize violations that are not eligible for the affirmative defense as unexpected emissions events. They do this so they can claim the affirmative defense.

The TCEQ should abandon the affirmative defense and invest resources it plans to dedicate to improve the affirmative defense process to make the enforcement process more effective. For example, the TCEQ may underutilize its authority to designate emissions events as "excessive," described in Section II of this report, because the process of reviewing, approving, and monitoring polluter compliance plans required for excessive emissions events is resource intensive and time consuming. If so, the TCEQ could dedicate additional resources saved by eliminating the affirmative defense to robustly exercise this authority.

As we explain below, industry's gaming of the affirmative defense has serious consequences, particularly in Texas's Permian Basin and in heavily industrialized cities along the Texas Gulf Coast, such as Houston, Port Arthur, and Corpus Christi.

West Texas: Natural Gas Flaring in the Permian Basin

Flaring at wells, gathering stations, gas plants and other mid and upstream facilities in the Permian Basin of West Texas release an enormous amount of sulfur dioxide air pollution. Indeed, for many years oil and gas sources in Texas's sparsely populated Permian Basin have reported more illegal pollution during unexpected emissions events than industries in any other part of the state—even compared to the big cities and industrial centers near the coast.[24] Modeling performed by EIP demonstrates that this flaring is causing violations of EPA's health-based standards for sulfur dioxide in ambient air in the Permian Basin.[25] Industry sources in the Permian routinely claim the affirmative defense for these unexpected emissions events, and the TCEQ routinely grants these claims.

But it turns out that much of the pollution reported by Permian Basin oil and gas sources does not fit the definition of an emissions event and should not qualify for the affirmative defense. An emissions event is "[a]n unplanned and unavoidable breakdown or excursion of a process or operation that results in unauthorized emissions."[26] Industrial operators are supposed to disclose all predictable pollution releases in a permit application. This is important, because the TCEQ needs to be able to assess all such releases to ensure that emissions won't harm the public *before* issuing a construction permit.

The Permian Basin has dozens of booster stations, compressor stations, and gathering stations. These stations gather and propel gas from wellheads and other upstream sources to pipelines and other downstream sources but must flare that gas instead when their downstream customers are unable to take it for any reason. While the exact timing of those downstream "shut-ins" may be unpredictable, they are not exceptional or infrequent occurrences, which is why boosters, compressors and gathering stations flare so frequently. Because Flaring under these circumstances is a routine activity that should be regulated and

controlled by permits and not excused as unusual emission events. But the TCEQ has historically treated flaring at these sources as if they were unpredictable emissions events. Accordingly, many permits for booster stations and similar sources authorize flares to be set up but not to actually burn gas (other than the tiny amount needed to keep flares from going out) that would emit any pollutants. For example, the permit for a booster station in Crane County, Chevron's McElroy Station 199 Booster Station and Emergency Flare, authorizes the flare to emit less than 0.01 ton per year of sulfur dioxide. This low limit only accounts for emissions from the pilot light needed to keep the flare lit, not the burning of the gas itself. These were the only emissions the TCEQ examined when it determined that pollution from the flare would not endanger public health or the environment. Yet, every year since 2017, predictably, the flare has emitted large amounts of unauthorized sulfur dioxide—*between 144 and 777 tons*.

TABLE 3. EMISSIONS FROM A WEST TEXAS GAS BOOSTER AND EMERGENCY FLARE STATION DURING 'UPSET' EVENTS

Year	Tons of SO_2 Emitted
2017	253
2018	304
2019	777
2020	283
2021	216
2022	144
Permit Limit:	**<0.01 tons per year**

Emissions from the McElroy Section 199 Flare, in tons of S02, according to TCEQ STEERS database

Chevron has characterized these unauthorized emissions from its flare as the product of unexpected emission events and has repeatedly claimed the affirmative defense to avoid penalties for pollution the flare was designed to emit. By treating these emissions as unforeseeable emissions events and not routine emissions subject to the permitting process, Chevron and its upstream customers never had to demonstrate that pollution from these recurring flaring events is safe. As of the release of this report, TCEQ has never imposed penalties for unauthorized pollution releases from Chevron's McElroy Booster Station and Emergency Flare.

Chevron's McElroy flare is not unique. The following 15 oil and gas facilities in the Permian Basin of West Texas claimed that their flares needed only a streamlined kind of permit intended for minor and insignificant sources of pollution – called a "permit by rule." Equipment authorized by this kind of permit may not emit more than 25 tons per year of sulfur dioxide.

But as the chart on the next page demonstrates, the unpermitted pollution from these flares exceeded those limits repeatedly from 2015 to 2020. In some cases, these flares emitted many times – as much as *nine times*, for facility in 2017 -- the permitted amount of sulfur dioxide:

TABLE 4. WEST TEXAS REPEAT SULFUR DIOXIDE (SO2) VIOLATORS

Owner/ Operator	Source Name	County	Notices of Violation	Tons of Sulfur Dioxide Emitted (Calendar Years)						Total Hours SO2 Emitted (2017 – 2020)
				2015	2016	2017	2018	2019	2020	
ConocoPhillips	Embar B-1 Battery	Andrews	0	3.76	187.4	144	224	197	12.5	3,530
ConocoPhillips	University Andrews 1E & 11T Battery	Ector	0	33.5	0	15.1	106	228	7.7	2,280
XTO Energy	Goldsmith CO2 Pilot Phase II Facility	Ector	0	118	80.8	234.2	115	100	50.9	2,913
OXY USA WTP	Johnson GBSA Unit CB	Ector	2	55.1	43.4	12.7	28.6	109	85.2	3,615
OXY USA WTP	Rhodes Cowden Unit Central Battery	Ector	3	248	12.0	50.2	57.8	48.0	75.3	7,020
Kinder Morgan	Tall Cotton Compression Station	Gaines	0	0	72.6	10.5	106	60.3	6.16	7,686
ConocoPhillips	Gandu 36 Battery	Ector	7	80.7	57.8	33.3	98.1	55.7	3.48	4,057
Occidental Permian	Goldsmith Landreth Deep Unit Station 6	Ector	5	33.2	45.4	26.4	57.2	60.1	34.6	4,560
Occidental Permian	Goldsmith Landreth Deep Unit Station 12	Ector	1	52.6	48.9	25.4	67.2	56.2	25.45	4,727
ConocoPhillips	Clyde Cowden Battery 7	Ector	3	20.2	50.7	18.4	33.4	100	1.99	2,758
Occidental Permian	Rhodes A Central Battery	Ector	2	0	0	18.4	35.2	54.3	27.7	1,871
ConocoPhillips	Gandu Battery 34	Ector	3	28.1	82.2	46.1	67.5	36.1	3.06	3,710
XTO Energy	CAG 437 Satellite Battery	Ector	0	19.6	4.52	29.8	26.1	62.9	0	1,534
ConocoPhillips	Clyde Cowden Battery 2	Ector	2	34.2	43.6	15.7	15.9	62.7	3.05	2,300
Blackbeard Operating	EWR Satellite 38 N	Crane	1	317	38.7	36.0	18.7	32.7	0.62	10,112

Source: TCEQ and STEERS database. Tons of sulfur dioxide highlighted in red indicate years when facilities exceeded their annual permit limits for sulfur dioxide.

As of the release of this report, the TCEQ has never imposed any penalties against any of these sources, even in cases where a source's failure to timely report an emissions event rendered it ineligible for the affirmative defense.[27] For example, the TCEQ declined to bring an enforcement action against Occidental Permian's Goldsmith Landreth Deep Unit Station

6, even after issuing *five warnings in a single year* (2020) to the company for failing to report unexpected emissions events on time and even though the company's emissions events had violated applicable sulfur dioxide permit limits every year from 2015 through 2020.

An aerial view of oil and gas well sites in the Permian Basin of West Texas.

On March 31, 2021, the Environmental Integrity Project sent EPA a letter including the table above explaining that the TCEQ had failed to address unexpected emissions events and permit violations for these sources.[28] It remains to be seen whether the agency will take meaningful steps to reduce flaring in the Permian Basin. However, only one of the sources listed in the table above reported any unexpected emissions events in 2022, and seven of the sources applied for a new permit or permit amendment after the Environmental Integrity Project sent the letter. The TCEQ has also issued guidance clarifying that predictable emissions may not be characterized as unexpected emissions events.[29] But it is too soon to tell whether these changes will lead to actual pollution reductions. It is possible that illegal emissions continue apace but are no longer being reported as unexpected emissions events.

Gulf Coast: Freeport LNG Games the Permitting Process

The air permitting process is meant to prevent the construction of new or expanded sources of air pollution that threaten public health.[30] For agencies like the TCEQ, requiring operators to demonstrate that air pollution from a new or modified source of pollution won't cause unacceptable air quality impacts is much more efficient and effective than working to make the air quality safe again after these sources are built.

Because large sources of pollution have a greater effect on air quality than smaller facilities, they are subject to more stringent permitting requirements. And because additional air pollution in areas where air quality is bad has greater potential for harm than new sources in areas with relatively clean air, large sources of air pollution in areas that fail to comply with

federal health-based ambient air quality standards are subject to the most stringent permitting requirements of all. In the language of the federal Clean Air Act, these are called "major" sources when they emit (or propose to emit) air pollutants above certain thresholds, and areas where the air is too polluted to meet health-based air quality standards are known as "nonattainment areas."

To ensure that new pollution will not harm public health in nonattainment areas, operators proposing major projects must offset the new pollution with reductions from existing sources in the area. This is most often accomplished by purchasing emissions credits through a market regulated by the state.[31] Because the law requires operators to secure more than one ton of reductions for each ton of new pollution proposed, major projects in nonattainment areas should, in theory, actually *decrease* the amount of nonattainment pollution being emitted. Major projects in nonattainment areas must also use the best available controls to reduce pollutants driving nonattainment, *regardless of cost*. The TCEQ may not authorize a major project that fails to comply with these requirements in a nonattainment area, because adding new pollution—which is not offset—in areas where the air is already unhealthy harms public health.

These offset and pollution control requirements are necessary to improve the air in heavily polluted industrialized areas. However, because they are expensive, polluters go to great lengths to avoid them. The easiest way for operators to avoid these requirements is to agree to permit limits below the major source threshold. Non-major—or "minor"—projects are not subject to stringent offset and pollution control requirements. Theoretically, polluters should be reluctant to accept permit limits they will not be able to meet, because the TCEQ may impose penalties to punish permit limit violations. But Texas's lax approach to enforcement and its permissive approach to industry's reliance on the affirmative defense erodes that risk and encourages polluters to underrepresent the amount of pollution a project will emit to circumvent stringent major source permitting requirements.

Consider the permitting history for Freeport LNG's natural gas liquefaction plant in Freeport, Texas, on the Gulf Coast south of Houston. According to EPA's demographic database called "EJScreen," 4,325 people live within three miles of this source, of which 78 percent are considered people of color and 64 percent are considered low-income. This three-mile area is in the 95th percentile nationally for cancer risk. The current permit for Freeport LNG's liquefaction plant authorizes units ("trains") 1 through 3 to emit 6.03 tons per year of nitrogen oxides (NOx), an ozone-forming pollutant. Because the liquefaction plant is in Brazoria County, which is designated as a "severe" ozone nonattainment area, major projects must offset each new ton of ozone-forming pollution with a reduction of 1.3 tons from an existing source.[32] The major source threshold for projects in this area is 25 tons per year of an ozone-forming pollutant. So, any operator proposing a new or modified source of pollution that will emit 25 tons per year or more of any nonattainment pollutant must offset all new emissions at a 1:1.3 ratio.

However, because Freeport LNG told the TCEQ that its new equipment would only emit 6.03 tons of nitrogen oxides each year, the 2018 permit authorizing construction of these

units was not subject to the stringent offset and pollution control requirements that apply to *major* projects. In 2019, when those liquefaction units went into operation, Freeport LNG released nearly 119 tons of unauthorized nitrogen oxide pollution during 25 separate unexpected emissions events. In 2020, the liquefaction plant released another 103 tons of unauthorized nitrogen oxide pollution during unexpected emissions events. Thus, the TCEQ's determination that construction and operation of these new units was safe was based on its consideration of nitrogen oxide emissions that accounted for less than three percent of the amount of pollution those units actually emitted during their first two years of operation. Moreover, none of that illegal pollution was offset with reductions at existing sources.

In June 2022, this explosion at Freeport LNG, south of Houston, was captured on video by a camera at a nearby beach.

But it turns out that some of these unauthorized releases were not the product of unplanned, emergency "emissions events" after all. In August 2022, Freeport LNG applied for a permit amendment to increase its nitrogen oxides limit from 6.03 to 43.50 tons per year.[33] In that application, Freeport LNG explained that the increase was necessary to authorize "streams associated with seal gas venting and proposed maintenance, start-up, and shutdown events that have become known through actual operation of these facilities."[34] In other words, Freeport LNG drastically underestimated—or possibly underrepresented – the amount of pollution its source would emit in order to get its project authorized and built quickly without having to comply with stringent pollution control requirements for major sources. Neither possibility is better than the other, and a more robust approach to enforcement and permit reviews would discourage negligence as well as dishonesty.

Federal and state law require the TCEQ to prioritize public health and safety over industrial development. Freeport LNG has no excuse for not anticipating that operation of these units would result in all this extra pollution. A company should not be allowed to construct a large and dangerous industrial facility it does not understand. There is too much that can go wrong and the potential risks for those living nearby are too high. Freeport LNG's liquefaction plant is a perfect example of these risks. Not only did it emit far more pollution that its permit allowed, it also exploded in 2022, releasing a massive fireball.[35]

Thus, even if Freeport LNG did not intentionally misrepresent the amount of pollution its source would emit, the company was still allowed to build, operate, and nearly destroy a facility it did not understand. And, as we've seen with Chevron's McElroy Station 199 and other similar sources in the Permian Basin, the TCEQ has repeatedly allowed construction of industrial sources based on obviously unrealistic representations about the amount of pollution they will emit. Just like Chevron, Freeport LNG was able to construct a major source of air pollution without being required to comply with stringent major source pollution control requirements by requesting artificially low limits and characterizing excess emissions as the product of unexpected emissions events. As of the date of this report, Freeport LNG has been penalized only $8,626 for these significant violations – including for the release of more than 200 tons of illegal nitrogen oxide and other pollutants during these emission events.[36] This kind of wrist slapping encourages sloppy and dishonest permit applications while discouraging substantial investment in the upkeep and proper operation of equipment that is necessary to cut down on emissions events.

While Freeport LNG's 2022 permit amendment application concedes that the liquefaction plant is a major source of pollution, subject to stringent pollution offset and control requirements, this correction comes too late. The project was already built. The purpose of the permitting process is to prevent the construction of projects that threaten public health. Freeport LNG's failure to accurately represent the amount of pollution its liquefaction plant would emit in its 2018 permit application deprived members of the public their opportunity to effectively challenge construction of the plant or to demand additional or improved pollution controls. Freeport LNG's 2022 amendment application proposes the installation of flare gas recovery, which will significantly reduce the amount of pollution released from the liquefaction plant's ground flares during routine operations and during unexpected emissions events. Had Freeport LNG accurately represented the amount of pollution the liquefaction plant would emit, this control would almost certainly have been required from the beginning. Delay in the implementation of this control resulted in years of significant preventable releases of pollution contributing to unhealthy air quality and allowed operation of a major source of pollution in a nonattainment are without any pollution offsets.

Prompt compliance with federal health-based ambient air quality standards not only protects public health, it is also in the industry's best interest. Pollution control requirements for major sources in nonattainment areas are very expensive, and the limited availability of pollution credits puts a ceiling on the amount of industrial development that may occur in nonattainment areas. Attainment with federal standards will be difficult to achieve so long as the TCEQ is unwilling to curb illegal emissions from unexpected emissions events,

ensure that permit applications accurately represent the amount of pollution that new or modified sources will emit, and crack down on operators who are unable to comply with unrealistic application representations.

Port Arthur: Unrealistic Pollution Limits for Port Arthur LNG

As a matter of policy, the TCEQ does not consider the public-health harms resulting from illegal pollution releases during unexpected emissions events as part of its permitting process. Such unpredictable and unauthorized pollution releases, the TCEQ contends, should be addressed through the enforcement process. But, as we've seen, the TCEQ's approach to enforcement does not go far enough to curb illegal pollution. And for many sources, like those listed in the table on page 5 with repeated unexpected emissions events year after year, recurring emissions events have become a predictable part of the sources' operation. Thus, the TCEQ's refusal to consider health impacts resulting from unexpected emissions events as part of the permitting process and its lax approach to enforcement work together to deprive the public of protections promised by federal and state law. For example, federal and state law prohibit construction of new pollution sources that threaten public health. But research establishes that illegal pollution releases during unexpected upset emissions events are a public health problem with real consequences.[37] In practice, the TCEQ's permitting process fails to effectively implement this prohibition.

The impact of Texas's willful blindness to the problem of illegal pollution from unexpected emissions events also weakens the effectiveness of the permitting process in other, less obvious ways. Take, for example, the idea of "technology-based" pollution control requirements that is a central feature of the federal Clean Air Act. As the name suggests, technology-based control requirements track the level of pollution control achievable using available technology. This approach to regulation recognizes that technology is constantly improving and dictates that the effectiveness of pollution controls should be measured against what is technologically possible at the time an agency issues a permit authorizing new air pollution. In this way, technology-based pollution controls are said to be "technology forcing:" controls that satisfy technology-based requirements today may not be good enough in the future.

Best Available Control Technology, or "BACT," is the most widely-used technology-based standard in the federal Clean Air Act and applies to major sources in attainment areas. To satisfy BACT, a source must use the most effective pollution control option, unless that option is unreasonably expensive or it results in unacceptable collateral pollution impacts.[38] The TCEQ's unwillingness to consider the problem of unexpected emissions events as part of the permitting process interferes with its implementation of federal BACT and other similar requirements because it skews how the agency evaluates the cost-effectiveness of pollution controls. It's easier for the TCEQ to write off as economically unreasonable a more expensive control that doesn't appear to make the air appreciably cleaner or make people safer. But this approach to evaluating costs becomes dangerous when the agency relies upon inaccurate information to understand the incremental benefits of better controls. These inaccuracies include how the source will perform once it is built, as well as the

cumulative impact of air pollution released by other nearby sources. For example, the TCEQ may have determined that flare gas recovery at Freeport LNG's liquefaction plant was unnecessary when construction of units ("trains") 1-3 was authorized as a minor project, because a minor project does not pose a significant threat to air quality. In practice, the TCEQ's evaluation of permit applications presumes that a proposed project will always function as represented without any breakdowns or unauthorized pollution releases. The TCEQ's evaluations often do not consider emissions from other nearby sources and the cumulative public health impacts of new and existing pollution. Accordingly, the information the TCEQ relies upon when evaluating the incremental benefits of improved controls often fails to reflect existing or potential threats to public health caused by air pollution. There is nothing preventing the TCEQ from making a reasonable effort to estimate upset emissions, based on the type of facility, industry experience, and similar factors when permitting a project and then cracking down hard on post permit upset events rather than granting facilities much higher permit limits after they are already built.

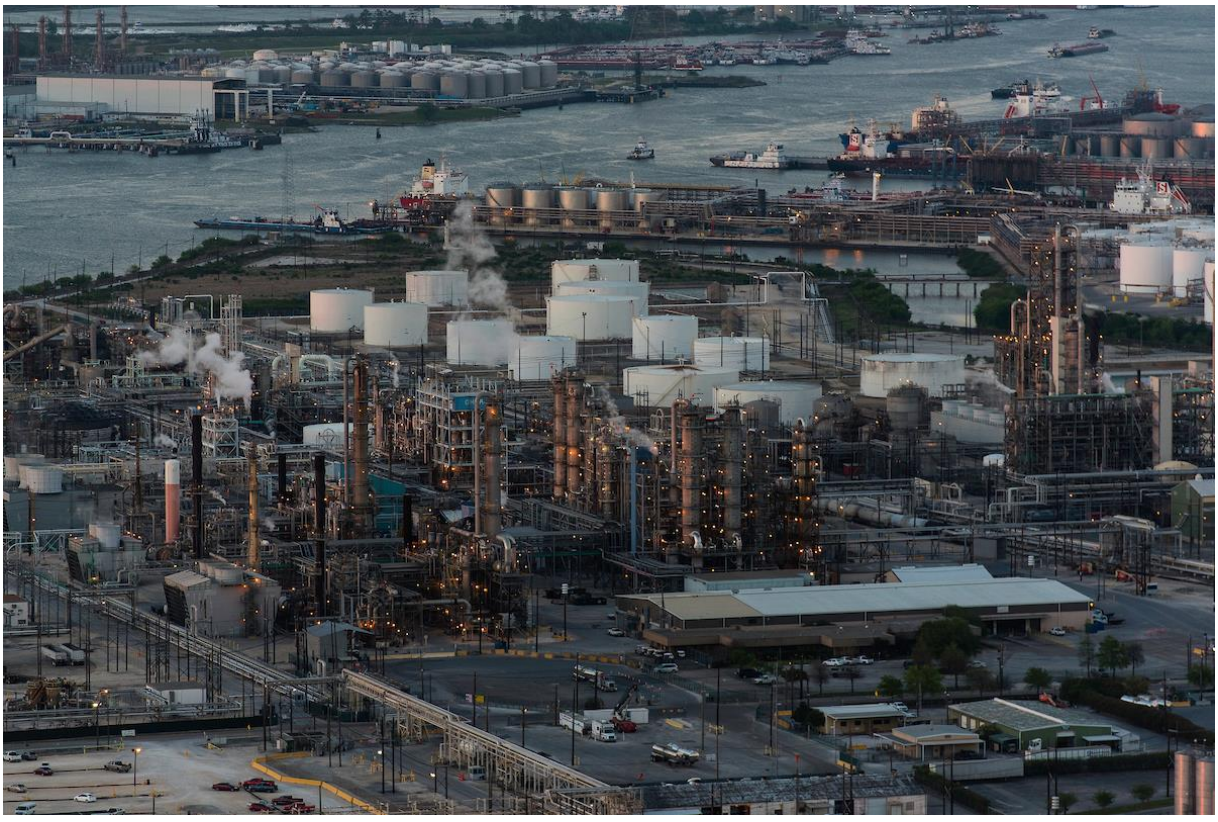
The TCEQ's abstract and highly idealized approach makes it easier for the agency to sign off on second-rate pollution controls, even when the public demands better. Take, for instance, the recent application to authorize construction of a new liquified natural gas export terminal in Port Arthur, Texas. The Port Arthur Community Action Network (PACAN) challenged the TCEQ's proposal to issue a permit authorizing the project because it contained nitrogen oxide emission limits that were much higher than limits found in permits for similar sources. The community action network presented evidence that a better control—called selective catalytic reduction, or "SCR"—was available that could reduce nitrogen oxide emissions from the Port Arthur LNG facility *by an additional 500 tons per year* and that the use of this control wouldn't be unreasonably expensive. After considering expert witness evidence presented by PACAN, the applicant (Port Arthur LNG), and the TCEQ, an independent administrative law judge determined that the applicant's complaints about cost were overblown, that better technology was available (SCR), and that the project's air permit should require it.[39]

Even though it was clearly within the TCEQ's discretion to accept the judge's well-supported findings, and despite the absence of any evidence that the project would not be feasible with improved controls, the TCEQ didn't require better pollution controls. There was no question whether the improved controls were technically feasible or that they would significantly reduce the amount of pollution emitted by the facility, only whether the applicant should be required to use a more expensive control option. To decide this question, the TCEQ relied on a record that contained concrete—though inaccurate—information about the additional cost of improved controls. The record also showed that—if the plant performs as designed with second-best controls—its pollution isn't expected to harm public health. In short, the record did not include information that would help the TCEQ commissioners understand that improved controls would result in a concrete public health benefit.

But other sources of pollution contribute to the same region's air quality, and they do not always comply with pollution limits in their permits. As we saw with the Freeport LNG

liquefaction plant and sources of pollution in the Permian Basin, illegal emissions during unexpected emissions events are a real problem and degrade air quality. And, as recent research shows, this problem is resulting in real harm.[40] So long as the TCEQ refuses to crack down on illegal air pollution while also turning a blind eye to the problem of unexpected emissions events as it issues permits authorizing the construction and operation of new sources of pollution, that serious harm will persist. Until the TCEQ gets a handle on the problem of illegal pollution in Texas, it must consider potential impacts from unexpected emissions events when it considers whether stricter technology-based control requirements should be included in the permits it issues. The benefit of better controls is not just to reduce the amount of pollution from unexpected emissions events or to reduce the frequency of these events. Rather, better controls also reduce the amount pollution emitted during routine operation and offset potential public health harms resulting from the combination of emissions authorized by a permit and predictable unauthorized emissions from the permitted source and other nearby sources that the TCEQ presently refuses to consider in its permitting decisions. The TCEQ's unwillingness to factor in the incremental public health harms resulting from illegal pollution releases and cumulative impacts from nearby sources as part of its cost-benefit analyses works against the public interest and effectively denies reality.

Houston: Hazardous Air Pollution Along the Houston Ship Channel



Industrial facilities along the Houston Ship Channel are often located close to neighborhoods, businesses, schools, and parks in communities such as Galena Park and Manchester.

In the Houston communities of Galena Park and Manchester, Texas's lax approach to enforcement is weakening public health protections promised by the air permitting process. Houston is designated as a severe ozone nonattainment area, meaning that ambient ozone concentrations already exceed federal health and welfare-based standards. In nonattainment areas, major projects must incorporate the most effective available control technology, regardless of cost. Therefore, the flawed cost-benefit analysis process described in the previous section is not a serious issue for major projects in this area.[41] Instead, the problem is the TCEQ's unwillingness to consider the cumulative effect of recurring illegal pollution releases at closely clustered sources when it decides whether to authorize projects that will emit additional pollution in the area.

At least six industrial sources of air pollution are located near these neighborhoods and have emitted large amounts of unauthorized volatile organic compound (VOC) pollution during unexpected emissions events since 2017. Two of these sources, Magellan's Galena Park Terminal and Pasadena Refining System's Pasadena Refinery, are among the top 20 emitters of VOCs during unexpected emissions events in Texas since 2017. These recurring releases pose a significant threat to people living near these sources. According to EPA's demographic database called EJScreen, an estimated 16,457 people live within one mile of at least one of these facilities, of which 93 percent (or 15,305 people) are people of color and 45 percent (or 7,406 people) are considered low-income. The area around these facilities is in the 97th percentile for cancer risk nationally.

TABLE 5. EMISSIONS DURING UPSET EVENTS NEAR GALENA PARK AND MANCHESTER, EAST OF HOUSTON, FY2017-2022

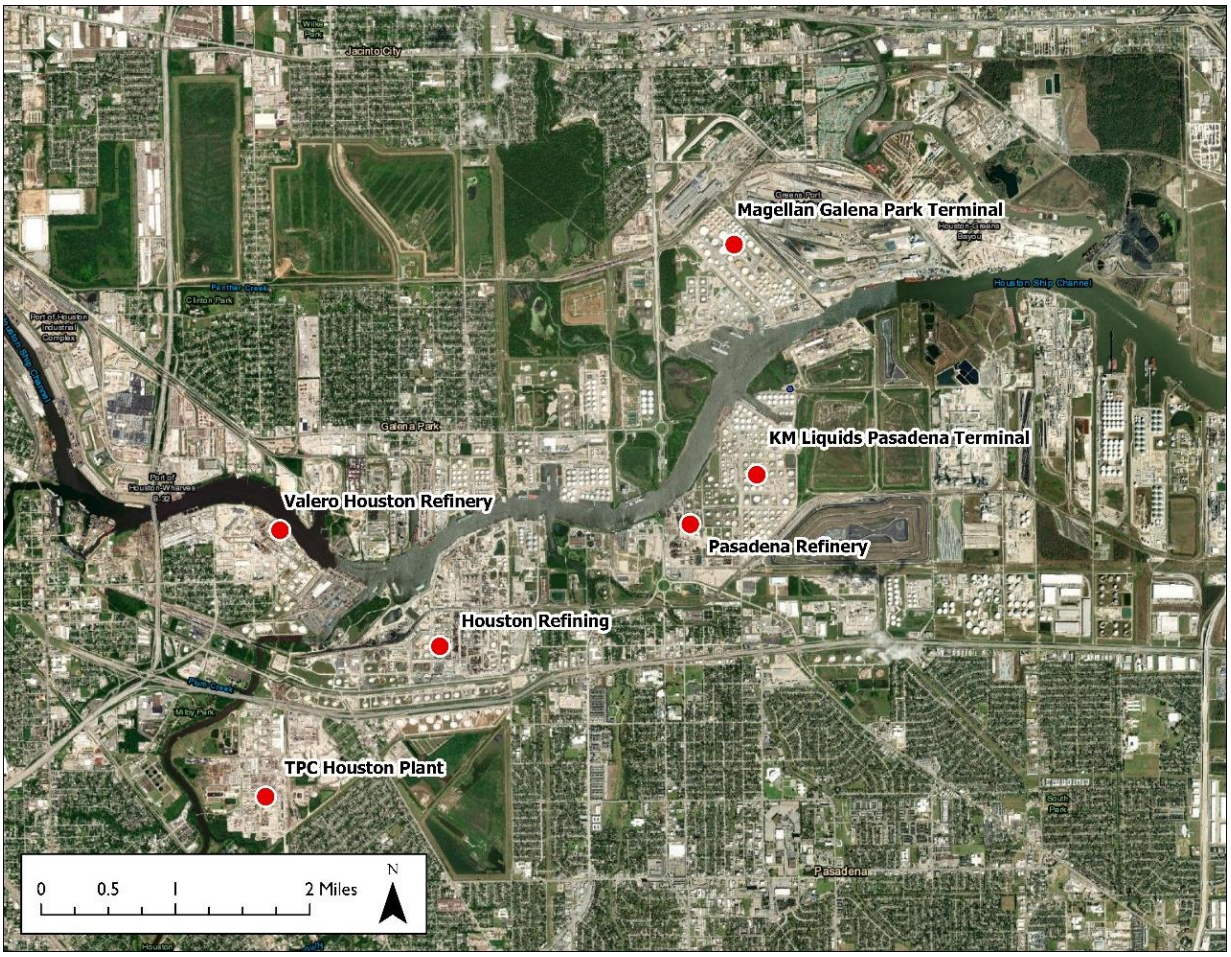
Source	Tons of VOCs and Hazardous Air Pollutants Released					
	2017	2018	2019	2020	2021	2022
Magellan Galena Park Terminal	1,186	0	0.2	0.2	0	0
PRSI Pasadena Refinery	13	1.1	382	1.5	35	0.3
Valero Houston Refinery	118	0.4	2.4	0	10	1.2
TPC Houston Plant	4.4	13.8	5.4	5.9	91	1.5
KM Liquids Pasadena Terminal	83	4.0	4.4	1.1	1.3	0
LyondellBasell Houston Refining	17	7.0	3.4	1.5	22	4.0

Source: Texas Commission on Environmental Quality STEERS database

Now consider that the TCEQ doesn't take any of this unauthorized pollution into account when deciding whether projects that will increase the amount of pollution released the Manchester and Galena Park neighborhoods are safe. Here, we see how the TCEQ's lax approach to enforcement, combined with its blinkered approach to permitting, work together to put the public health at risk. People living in Manchester and Galena Park should not have to endure exposure to significant quantities of illegal pollution emitted by the same six sources year after year. That they still do is a significant failure of the state's

approach to enforcement. To add insult to injury, the state ignores the reality of this illegal pollution when it issues permits allowing pollution increases in the area. In this way, the TCEQ's lax approach to enforcement and its blinkered approach to permitting deprive people living in Texas of protections promised by federal and state law.

FIGURE 2. LOCATIONS OF THESE SOURCES ALONG HOUSTON SHIP CHANNEL



Enforcement and Industrial Disasters

For the TCEQ and industry, it can be easy to write off emissions events without obvious harm as insignificant and unworthy of serious attention. But this lack of scrutiny removes an important incentive for industrial investments in proper maintenance. Diligent maintenance is not only necessary to cut down on pollution releases during emissions events, it also prevents industrial disasters. Lackadaisical enforcement is particularly dangerous in Texas, where plants built long ago continue to manufacture, process, and store highly explosive and toxic chemicals. Increases in Texas's oil refining and petrochemical production capacity have dramatically outpaced the construction of new refineries and chemical plants. Instead, industry has sought to cut costs by piling new capacity into existing infrastructure, built long

ago. As illustrated by the following table, many of these aging facilities break down frequently and release large amounts of pollution during emissions events.

Industry's reliance on aging infrastructure to support increased production, storage, and transportation of toxic and explosive chemicals presents a significant and underappreciated threat to public safety. Yet, the TCEQ does not directly regulate the maintenance and replacement of aging infrastructure. Instead, one of the primary regulatory incentives for polluters to maintain safe operating conditions at aging facilities comes from the threat of penalties when equipment breaks down, resulting in an unauthorized pollution release. However, this indirect incentive is only effective if the TCEQ consistently imposes meaningful penalties for illegal pollution releases. Thus, the TCEQ's failure to crack down on emissions events also increases the risk of industrial disasters in Texas.

TABLE 6. IN URBAN AREAS, OLDER PLANTS WITH FREQUENT EXCESS EMISSIONS EVENTS

Regulated Entity	City	Year Constructed	Events Per Fiscal Year						Total Tons Emitted
			2017	2018	2019	2020	2021	2022	
Valero Port Arthur Refinery	Port Arthur	1901	23	14	7	2	4	6	858
Chevron Phillips Chemical Port Arthur Facility	Port Arthur	1901	7	4	5	4	5	7	728
Motiva Port Arthur Refinery	Port Arthur	1902	9	14	15	17	13	11	1,870
ExxonMobil Beaumont Refinery	Beaumont	1903	13	10	15	16	6	3	2,848
PRSI Pasadena Refining System	Pasadena	1919	21	9	21	16	10	2	679
ExxonMobil Baytown Refinery	Baytown	1920	27	12	14	9	5	16	1,526
TotalEnergies Petrochemicals & Refining Port Arthur Refinery	Port Arthur	1936	24	31	20	15	11	12	890
TPC Group Port Neches	Port Neches	1944	6	22	9	2	3	0	687
Chevron Phillips Chemical Cedar Bayou Plant	Baytown	1963	15	27	18	14	15	26	2,200
Intercontinental Terminals Deer Park Terminal	La Porte	1972	1	0	3	3	1	6	7,701
Exxon Mobil Chemical Baytown Olefins Plant	Baytown	1979	7	4	10	8	11	5	621
Equistar Corpus Christi Plant	Corpus Christi	1980	12	6	3	3	5	1	971

Source: Texas Commission on Environmental Quality STEERS database

Former TCEQ Commissioner and Executive Director Toby Baker acknowledged exactly this problem in the wake of the 2019 explosion that permanently destroyed the manufacturing capacity at TPC's Port Neches chemical plant:

> *"Within the last year, I have witnessed an unacceptable trend of significant incidents impacting the Gulf Coast region. While not all emergency events may be prevented, it is imperative that industry be accountable and held to the highest standard of compliance to ensure the safety of the state's citizens and the protection of the environment."*[42]

Unfortunately, this call has gone unheeded by the TCEQ. This point is well-illustrated by TPC and the TCEQ's response to the same Port Neches disaster that prompted these remarks.

TPC's Houston and Port Neches chemical plants provide examples of significant risk. Both plants were constructed in the 1940s to produce synthetic rubber for World War II. One of the primary chemicals produced and stored at these plants is 1,3-butadiene, a dangerous chemical known to cause cancer in humans that is regulated under federal law as a Hazardous Air Pollutant.[43] It is also highly explosive and highly reactive with oxygen.[44] In 2019, a pipe at TPC's Port Neches plant ruptured, leading to the release of approximately 6,000 gallons—or 30,000 pounds—of 1,3-butadiene in less than a minute.[45] This liquid formed a vapor cloud and ignited, causing a massive explosion that launched equipment into the air and permanently destroyed the plant's chemical production capacity. At least two explosions followed this initial blast. These explosions led to the evacuation of people living within four miles of the plant and caused extensive damage to property outside the plant. Flammable liquid continued to leak from damaged equipment and fires at the plant burned for more than a month. Over the course of this extended disaster, TPC reported the unauthorized release of 257,640 pounds of carcinogenic 1,3-butadiene.[46] According to the Chemical Safety Board's final report on the incident, this explosion caused "$153 million in off-site property damage to nearby homes and businesses," and "was felt up to 30 miles away."[47] The final report highlights the connection between TPC's failure to properly maintain equipment used to produce a highly explosive and toxic chemical and the 2019 disaster.[48]

As of early 2023, TPC now plans to increase production capacity at its Houston Plant to make up for the capacity lost when its Port Neches plant exploded. TPC's plans to relocate its exploded chemical production capacity to the much more densely populated East Houston area understandably drew opposition from people living near the plant. More than 127,000 people live within three miles of the plant, and nearby neighborhoods are home to multiple schools.[49] According to information that TPC filed with the federal government, an explosion involving just one of several 1,3-butadiene storage tanks at its Houston plant could have a blast radius of 1.7 miles.[50] More than 48,000 people call this potential blast radius home.[51] When members of the public raised these concerns, the TCEQ responded that it lacked authority to consider public safety issues as part of the permitting process.[52] Instead, the TCEQ explained that any explosion at TPC's Houston plant would be considered an emissions event and subject to penalties as part of the enforcement process.[53]

But the TCEQ's enforcement process has proved not to be a significant incentive for TPC to maintain its aging infrastructure and to prevent breakdowns that could lead to disasters, like the one that occurred in Port Neches. TPC's Houston plant reported 50 emissions events between 2017 and 2022. As of the release of this report, the TCEQ has only imposed fines for one of these events, totaling $25,447.[54]

A recent EPA enforcement order against TPC establishes that members of the public were justified in their concern about maintenance of TPC's Houston plant. According to the order, TPC "fail[ed] to identify hazards and to design and maintain a safe facility free of external corrosion, and hazardous conditions[.]"[55] Notably, EPA determined that the same conditions that led to the explosion at TPC's Port Neches plant were present at TPC's Houston plant and that TPC did not track or monitor those conditions effectively.[56] EPA also noted that TPC's Houston plant "has piping and equipment with visible external corrosion," and that this "visible external corrosion has created equipment deficiencies including pinhole leaks, pitting, and line leaks.[57] Additionally, EPA cited TPC for failing to "perform inspections and tests on piping process equipment at a frequency consistent with applicable manufacturers' recommendations and good engineering practices," failing "to correct deficiencies in pump [and compressor] process equipment that are outside the acceptable limits," and failure "to correct equipment deficiencies in pressure gauge process equipment where the gauges had no readings or incorrect readings."[58]

Texas is often quick to bring high-profile enforcement cases against polluters *after* a catastrophic event. However, its failure to punish polluters consistently and sufficiently for non-catastrophic emissions events enables industry's failure to properly inspect, maintain, and replace aging or unsafe equipment and contributes to the risk of industrial disasters.

How TCEQ Can Use Its Existing Authority to Protect Public Health

The previous sections of this report explored the affirmative defense and explained how it is an unwarranted administrative burden that interferes with the TCEQ's enforcement and implementation of its permitting programs. This section explores the TCEQ's underuse of existing authority that it could use to better serve communities that are repeatedly exposed to illegal pollution.

If TCEQ determines an emissions event is "excessive," the operator must either develop a specific plan to prevent future unexpected emissions events or obtain a permit to authorize emissions that are "sufficiently frequent, quantifiable, and predictable."[59] Once the plans are approved by the TCEQ, the agency can then enforce them. If the TCEQ disapproves a corrective action plan or if the plan inadequately prevents more unexpected emissions events, the operator must revise the plan to resolve its deficiency. In short, the TCEQ has authority to require operators responsible for an excessive emissions event to take concrete steps necessary to prevent future illegal releases.

Unfortunately, the TCEQ drastically underuses this authority. From the beginning of September 2016 through the end of August 2022, polluters in Texas reported 21,769 unexpected emissions events, according to data EIP obtained from the TCEQ. The TCEQ designated only 119 unexpected emissions events excessive during that period. Thus, excessive emissions events constitute approximately one half of one percent of emissions events reported. This number is far too low.

The first factor TCEQ must consider under Texas law when deciding whether an emission event is excessive is the *frequency* of a facility's unpermitted emissions events.[60] This makes sense, because recurring problems become predictable and should be prevented or accounted for through the permitting process. To determine whether the TCEQ is properly evaluating the frequency of unexpected emissions events at a particular process unit or source, we reviewed information about all unexpected emissions events reported to the TCEQ during the six-year time period between September 1, 2016, and August 31, 2022. For a table showing the 20 facilities that reported the most frequent upsets, see page 3 in the executive summary.

Of the 4,393 unexpected emissions events reported by these 20 sources, only four—or one tenth of one percent—were designated as excessive emissions events by the TCEQ and therefore required cleanup plans. Surely, sources that break down as frequently as these could improve their performance—if the TCEQ compelled them to do so. If not, the recurring pollution releases during unexpected emissions events should be subject to a health-impacts review and authorized by permit. Allowing illegal pollution releases to occur as regularly as they do at these sources without undertaking any evaluation of whether the pollution releases are harming people is inconsistent with the TCEQ's mandate to protect public health. The total amount of penalties levied by the TCEQ against these 20 sources for air violations totals less than a quarter million dollars ($210,709), which averages out to less than $50 for each reported emissions event. The TCEQ's unwillingness to require sources like these to undergo the corrective action plan process or to penalize them for repeated releases of unauthorized pollution provides little incentive for these sources to figure out how to prevent future releases.

TABLE 7. UNEXPECTED EMISSIONS EVENTS LASTING LONGER THAN ONE WEEK, FY2017-2022)

Fiscal Year	No. of Events at least 168 hours in duration (one week)
2017	253
2018	262
2019	409
2020	372
2021	250
2022	88
Total	**1,634**

The TCEQ is also supposed to consider the duration of an unexpected emissions events when deciding whether it is excessive. This directive makes sense, because operators should have effective plans for addressing breakdowns quickly to minimize the amount of pollution released.

Unfortunately, the TCEQ rarely designates unreasonably long emissions events as excessive. According to the TCEQ's STEERS database, industry reported 1,634 unexpected emissions events that lasted one week or longer from the beginning of September 2016 through the end of August 2022. An emissions event should not last this long if a source is diligently monitoring for malfunctions and has a plan to resolve such malfunctions promptly. Nonetheless, the TCEQ has only designated 27 of these events lasting a week or longer—less than two percent—as excessive and requiring a cleanup plan.

The excessive emissions event determination rate does not even reach *10 percent* when one looks at unexpected emissions events lasting longer than *two months*. Between September 2016 and August 2022, industry has reported 78 unexpected emissions events lasting at least two months. Only seven of these, or nine percent, have been designated as excessive by the TCEQ. Moreover, the TCEQ has imposed penalties for fewer than ten of these extended emissions events. This is unacceptable. To change the culture of noncompliance in Texas, the TCEQ must begin to consistently designate unreasonably long emissions events as excessive and require operators to develop plans and invest resources to ensure that illegal pollution releases are kept as low as possible.

Example: Alon USA's Big Spring Refinery

Alon USA's Big Spring Refinery is in Howard County, Texas, with more than 10,000 people living within three miles. In 2019, Alon USA reported an unexpected emissions event that began on July 14, 2019, and lasted more than four months (3,556 hours), ending on Dec. 9, 2019. During this event, the refinery reported the unauthorized release of 62 tons of sulfur dioxide.

This volume of sulfur dioxide is far above the emissions considered in Alon USA's permits. If the company were to build a major expansion project at its plant, adding at least 40 tons of sulfur dioxide per year, the expansion would be considered "major" and trigger stringent requirements for technology-based pollution controls and demonstrations of air quality impacts. Despite the duration of this emissions event and the amount of unauthorized sulfur dioxide pollution released during the event, the TCEQ declined to designate it "excessive." Indeed, we were unable to find any evidence that the TCEQ initiated any enforcement action against Alon USA for this unreasonably long emissions event.

Data concerning the two criteria addressed above are sufficient to establish that the TCEQ is not designating enough emissions events as excessive. An increase in the number of excessive emissions event determinations would require additional work by agency staff to evaluate and monitor compliance plans. But this burden should not be more significant than the burden of reviewing the thousands of affirmative defense demonstrations submitted each year. At least this work, unlike the TCEQ's work to review affirmative defense

demonstrations, would help reduce the amount of pollution released in Texas and protect public health.

Conclusion:

In Texas, a relatively small number of polluters are responsible for most of the 21,769 illegal air pollution events reported over a six-year period. More than 1,600 of these events took place for more than a week, in many cases releasing thousands of pounds of pollution into the air, worsening regional air quality and harming public health. Despite this, the TCEQ only designated 119 of these events as "excessive" during this time, a designation that would be necessary to sufficiently penalize polluters for egregious or repeated emission events.

Key to the culture of noncompliance the TCEQ has fostered in Texas is the affirmative defense, which allows operators to avoid accountability for equipment failures and other sources of pollution. The TCEQ rarely requires facility owners to prove they qualify for the affirmative defense, so the concept has become a frequently abused legal tool for industry. Affirmative defense claims have also become a significant drain on the TCEQ's resources, with staff having to review thousands of applications filed each year. The Clean Air Act holds polluters strictly liable for violating emission limits and that law applies to Texas as well as other states. The affirmative defense should be eliminated altogether as an unworkable concept that does too much to excuse violations and not enough to encourage industry to reduce illegal emissions from repeated equipment breakdowns or industrial accidents.

Although the affirmative defense is only available for unexpected emissions events, industry has taken to applying the label to other kinds of violations that have no such defense. This weakens the air permitting process by pretending that routine pollution from a facility is a departure from normal. Permit applicants often claim unrealistically low limits on permits, trying to avoid triggering requirements for better control technologies, a more thorough permitting process, and more chances for public involvement. If emissions turn out to be higher than expected, operators can count on the TCEQ to endorse their claims that those emissions were unforeseen and unpredictable.

All of this means is that the TCEQ is allowing these facilities to make the air less safe for neighboring residents to breathe, as well as increasing the risk of industrial disasters. Older plants in populated areas with repeated emissions events are some of the biggest threats, and even new plants that are not properly designed and permitted can pose serious risks to nearby communities. The TCEQ should begin making industrial facilities safer by using its existing authority to designate unexpected emissions events as "excessive." This would allow the TCEQ to require specific actions of the companies involved and give the agency more tools to ensure operators follow through on their plans to improve their facilities. Just as unexpected emissions events serve as the legal framework for a culture of noncompliance, excessive emissions events can serve as a framework for TCEQ to more actively engage in stopping preventable pollution and protecting the health of Texas residents.

Policy Recommendations:

The Texas Commission on Environmental Quality should:

- Eliminate its unworkable "affirmative defense," which is not only a loophole allowing polluters to escape penalties for illegal pollution, but also a senseless drain on agency resources that increases public health risks as well as the potential for industrial disasters;
- Penalize polluters more frequently and significantly to provide a real financial incentive for improved maintenance and upkeep, resulting in fewer breakdowns, less pollution, and safer industrial facilities;
- Scrutinize air permit applications to ensure that industry's representations match the size of the facility and how much it would likely emit. When applicants fail to comply with unachievable emission limits taken to avoid "major" source pollution control requirements, TCEQ should penalize them;
- Require facilities to take corrective actions to avoid repeated or serious violations of emission limits caused by equipment malfunctions or sudden startups or shutdowns. TCEQ should stop wasting resources it spends excusing polluters from penalties or exempting them from enforcement actions, and focus instead on protecting communities from air pollution released during malfunctions or sudden startups or shutdowns.

The Texas Legislature should:

- Approve the maximum penalty increase proposed in the TCEQ's Sunset Bill; and

- Abolish Texas's affirmative defense for unexpected emissions events.

Appendix A: The Numbers for 2022

Companies must disclose pollution releases during unexpected emissions events within 24 hours if the release exceeds a threshold specified by law.[61] The TCEQ started this reporting requirement in 2002. The tables in this appendix are based on emissions event reports filed with the TCEQ for pollution releases during calendar year 2022.[62] These tables do not include pollution from *unreported* emissions events or from excess emissions that occur during normal daily operation. The rankings below list the industrial sources responsible for the largest amounts of self-reported air pollution during unexpected emissions events.

Table A1. Pollutant Totals—Unauthorized Pollution Released During Unexpected Emissions Events in 2022

Pollutant	Pounds Reported
Benzene	96,331
Volatile Organic Compounds (VOC)	11,460,992
Hazardous Air Pollutants (HAPs)	715,429
Nitrogen Oxides (NO_X)	4,109,937
Particulate Matter (PM)	86,743
Sulfur Dioxide (SO_2)	9,774,938
Hydrogen Sulfide (H_2S)	387,094
Total (all pollutants)	**44,436,151**

Table A2: Top 10 sources of total unauthorized air pollution during unexpected emissions events in 2022

Rank	Facility Name	Region	County	Total Pounds (lbs)
1	Bayport Polymers	Port Arthur area	Jefferson	6,188,686
2	ExxonMobil Beaumont Refinery	Beaumont area	Jefferson	2,073,933
3	Sand Hill Gas Plant	West Texas	Crane	2,047,421
4	Martin County Gas Plant	West Texas	Martin	2,020,926
5	Sale Ranch Gas Plant	West Texas	Martin	1,526,495
6	Chevron Phillips Chemical Cedar Bayou Plant	Houston area	Harris	1,224,207
7	Deer Park Oil Refinery	Houston area	Harris	1,032,004
8	Brooking Compressor Station	West Texas	Howard	1,025,031
9	Borger Carbon Black Plant	North Texas	Hutchinson	899,902
10	ExxonMobil Baytown Refinery	Houston area	Harris	831,818

Source: Texas Commission on Environmental Quality STEERS (State of Texas Environmental Electronic Reporting System) database

Table A3. Top 10 Sources of Unauthorized Benzene Emissions

Rank	Facility Name	County	Total Benzene (lbs)
1	Chevron Phillips Chemical Cedar Bayou Plant	Harris	38,973
2	Baystar Bayport Polymers	Jefferson	10,899
3	Equistar Chemicals, Corpus Christi	Nueces	5,371
4	ExxonMobil Oil Beaumont Chemical Plant	Jefferson	4,763
5	Valero Corpus Christi Tank Farm	Nueces	4,703
6	Exxon Mobil Chemical Baytown Olefins Plant	Harris	4,398
7	Motiva Chemicals Port Arthur Chemicals	Jefferson	4,227
8	Equistar Chemicals Channelview Complex	Harris	2,914
9	Eastman Chemical Texas Operations	Harrison	2,782
10	BASF Total FINA NAFTA Region Olefins Complex	Jefferson	2,184

Benzene is a highly flammable gas used by many industries that produce or process petroleum products such as fuels, plastics, or pesticides. Exposure to benzene can result in drowsiness, dizziness, headaches, rapid or irregular heartbeat, and irritation to the eyes, skin, or respiratory system. Exposure to high amounts of benzene can cause unconsciousness, vomiting, and even death. In the long term, benzene can cause blood disorders, damage to the immune and reproductive systems, and cancer.

Table A4. Top 10 Sources of Unauthorized Volatile Organic Compound Emissions

Rank	Facility Name	County	Total VOCs (lbs)
1	XTO Energy Mahoney Lease	Yoakum	727,651
2	Valero Corpus Christi Tank Farm	Nueces	683,457
3	Chevron Phillips Chemical Cedar Bayou Plant	Harris	547,175
4	Energy Transfer Houston Pipeline Webb County	Webb	544,454
5	West Texas Gas Brooking Compressor Station	Howard	323,520
6	Chevron Phillips Chemical Port Arthur Facility	Jefferson	277,522
7	Targa Buffalo Gas Plant	Martin	241,198
8	ETC Texas PL Pipeline Fayette County	Fayette	221,793
9	ExxonMobil Baytown Refinery	Harris	215,475
10	Motiva Port Arthur Refinery	Jefferson	211,559

Volatile Organic Compounds (or "VOCs") are a class of chemicals that includes many different hazardous air pollutants, and many are known carcinogens, like benzene. The primary sources of VOCs are petroleum refineries, chemical plants, and oil and gas extraction and processing operations. According to the National Institutes of Health, "short-term exposure to VOCs can cause eye and respiratory tract irritation, headaches, dizziness, visual disorders, fatigue, loss of coordination, allergic skin reactions, nausea, and memory

impairment," while "long-term exposure to volatile organic compounds can cause damage to the liver, kidneys, and central nervous system." VOCs are also a key component of ozone formation. VOCs, including hazardous air pollutants, are often released in large and concentrated doses from flares, leaking pipes, and damaged tanks during unexpected emissions events.

Table A5. Top 10 Sources of Unauthorized Hazardous Air Pollutants (HAPs)

Rank	Facility Name	County	Total HAPs (lbs)
1	Valero Corpus Christi Tank Farm	Nueces	152,517
2	Oxy Vinyls La Porte VCM Plant	Harris	112,647
3	Chevron Phillips Chemical Cedar Bayou Plant	Harris	98,446
4	Baystar Bayport Polymers	Jefferson	36,625
5	Motiva Port Arthur Refinery	Jefferson	24,691
6	ExxonMobil Beaumont Refinery	Jefferson	19,873
7	BASF Total FINA NAFTA Region Olefins Complex	Jefferson	13,254
8	TPC Group Port Neches Operations	Jefferson	12,317
9	ExxonMobil Oil Beaumont Chemical Plant	Jefferson	11,862
10	Formosa Point Comfort Plant	Calhoun	11,251

Hazardous Air Pollutants, also known as "HAPs" or air toxics, are a group of 188 chemicals known to cause cancer or other serious health effects, including reproductive problems and birth defects.[63] HAPs emitted by industrial sources in Texas include the carcinogens benzene, ethylene oxide, and 1,3 Butadiene. Industrial sources of pollution, including petroleum refineries, chemical plants, marine loading terminals, and power plants release significant quantities of air toxics. Many chemicals that are regulated as HAPs are also species of VOC, which contribute to ozone formation.

Table A6. Top 10 Nitrogen Oxide Sources During Unexpected Emissions Events

Rank	Facility Name	County	Total NOx (lbs)
1	Baystar Bayport Polymers	Jefferson	1,223,124
2	West Texas Gas Martin County Gas Plant	Martin	617,849
3	West Texas Gas Sale Ranch Gas Plant	Martin	407,770
4	West Texas Gas Brooking Compressor Station	Howard	307,376
5	Gulf Coast Growth Ventures Project	San Patricio	159,205
6	Chevron Phillips Chemical Cedar Bayou Plant	Harris	144,767
7	Targa Buffalo Gas Plant	Martin	104,211
8	Targa Driver Gas Plant	Midland	96,925
9	Dow Texas Operations Freeport	Brazoria	52,089
10	West Texas Gas Benedum Gas Plant	Upton	49,821

Nitrogen oxides (NOx) are emitted through the burning of coal, oil, diesel, and natural gas. NOx are a primary ingredient in the formation of smog (ground level ozone), which can damage lungs and trigger asthma attacks. They also contribute to nitrogen pollution in waterways and low-oxygen "dead zones" that kill fish and other aquatic life. Short-term exposure to nitrogen oxides also can cause eye and skin irritation, difficulty breathing, abdominal pain, headaches, and nausea. Long-term exposure can lead to asthma and respiratory infection, and in high enough levels, can harm developing fetuses and decrease female fertility.

Table A7. Top 10 Particulate Matter Sources During Unexpected Emissions Events

Rank	Facility Name	County	Total PM (lbs)
1	Philips 66 Borger Refinery	Hutchinson	44,421
2	Tokai Carbon Borger Carbon Black Plant	Hutchinson	20,679
3	Valero Refining Texas City Refinery	Galveston	6,747
4	Tokai Carbon Big Spring Carbon Black Plant	Howard	4,450
5	ExxonMobil Baytown Refinery	Harris	3,138
6	Phillips 66 Sweeny Refinery and Petrochemical Complex	Brazoria	2,344
7	ExxonMobil Beaumont Refinery	Jefferson	780
8	Valero McKee Refinery	Moore	684
9	Valero Houston Refinery	Harris	579
10	TotalEnergies Petrochemicals and Refining Port Arthur Refinery	Jefferson	556

Particulate matter (PM), or soot pollution, are microscopic particles that often form in the air from the emissions of chemicals, metals, and other pollutants from power plants, industrial facilities, and motor vehicles. Exposure to particulate matter can irritate the eyes, nose, and throat, and exposure to high amounts of particulate matter may cause low birth weight, preterm deliveries, and fetal and infant deaths. Over the long term, exposure to particulate matter can cause reduced lung function, development of chronic bronchitis, and premature death for those with heart or lung disease. Many sources are not required to report PM releases from their combustion units to STEERS and instead only report opacity, therefore actual PM emissions during unexpected emissions events is higher than reported.

Particulate matter is a particularly dangerous pollutant with well-understood health impacts for both short and long-term exposure.[64] Texas permits for sources that emit particulate matter establish mass-based emissions limits and major sources are required to report particulate matter emission rates to the TCEQ's emissions inventory. There is no good reason for the TCEQ to continue to allow some sources to report opacity levels—an indirect and unreliable of particulate matter emissions—for unexpected emissions events. Instead, the agency should revise its rules to require all sources to report the amount of particulate matter released during reportable unexpected emissions events.

Table A8. Top 10 Sources of Sulfur Dioxide During Unexpected Emissions Events

Rank	Facility Name	County	Total SO2 (lbs)
1	Targa Sand Hills Gas Plant	Crane	1,771,936
2	Pemex Deer Park Oil Refinery	Harris	971,035
3	DCP Midstream Goldsmith Gas Plant	Ector	678,727
4	ExxonMobil Beaumont Refinery	Jefferson	606,482
5	Tokai Carbon Borger Carbon Black Plant	Hutchinson	574,882
6	Chevron McElroy Main Water Inj Sta & Oil Treat Fac	Crane	492,928
7	OXY USA WTP Willard CO2 Separation Plant	Yoakum	308,781
8	Chevron McElroy Section 199 Emergency Flare	Crane	287,524
9	Chevron North Riley Central Battery	Gaines	219,818
10	Targa Wildcat Gas Plant	Winkler	192,649

Sulfur dioxide (SO_2) is a colorless gas with a strong, suffocating odor, and mainly comes from power plants that burn or process sulfur-rich fuels, like oil or coal for electrical power and other industrial processes, as well as upstream oil and gas facilities. Sulfur dioxide pollution poses serious health problems particularly in large urban areas with a concentrated use of fossil fuels, as well as poorly controlled combustion events from industrial installations. EIP modeling has demonstrated that flaring of natural gas in the Permian Basin is leading to violations of health/welfare-based SO_2 National Ambient Air Quality Standards in the Permian Basin.[65]

[1] For example, pollution releases exceeding permit limits during routine operations and pollution from equipment that is not authorized by a permit are illegal, but they are not emissions events

[2] Environmental Integrity Project and Environment Texas, "Breakdowns in Enforcement," July 7, 2017. Link: https://environmentalintegrity.org/wp-content/uploads/2017/02/Breakdowns-in-Enforcement-Report.pdf

[3] Al Shaw, The Most Detailed Map of Cancer-Causing Industrial Air Pollution in the U.S., ProPublica (Nov. 2, 2021, Updated March 15, 2022), available at https://projects.propublica.org/toxmap/; *see also* Lylla Younes, et. al, Poison in the Air, ProPublica (Nov. 2, 2021), available at https://www.propublica.org/article/toxmap-poison-in-the-air (explaining significance of map); *see also* Sustainable Systems Research, LLC, Evaluation of Vulnerability and Stationary Source Pollution in Houston, (Sept. 2020), available at https://www.nrdc.org/sites/default/files/houston-stationary-source-pollution-202009.pdf; *see also* Yukyan Lam et al., Toxic Air Pollution in the Houston Ship Channel: Disparities Show Urgent Need for Environmental Justice, NRDC (Aug. 31, 2021), available at https://www.nrdc.org/resources/toxic-air-pollution-houston-ship-channel-disparities-show-urgent-need-environmental

[4] Hollingsworth, Alex, David Konisky and Nikolaos Zirogiannis. "The Health Consequences of Weak Regulation: Evidence from Excess Emissions in Texas." Technical report.2019. Link: https://ssrn.com/abstract=3382541

[5] 30 Tex. Admin. Code § 101.222(a)(1), (5).

[6] The TCEQ's regulations provide that the TCEQ is to use the following factors to determine whether an emissions event is excessive: 1) the frequency of the facility's emissions events; 2) the cause of the emissions event; 3) the quantity and impact on human health or the environment of the emissions event; 4) the duration of the emissions event; 5) the percentage of a facility's total annual operating hours during which emissions events occur; and 6) the need for startup, shutdown, and maintenance activities. 30 Tex. Admin. Code § 101.222(a). Link: https://texreg.sos.state.tx.us/public/readtac$ext.TacPage?sl=T&app=9&p_dir=N&p_rloc=122841&p_tloc=&p_ploc=1&pg=4&p_tac=&ti=30&pt=1&ch=101&rl=211
This does not suggest that non-excessive events are insignificant or that they should not be subject to penalties. Many of the largest, longest lasting emissions events -- as well as repeated emissions events at the same source -- are not designated by the state as "excessive," even though they are occasionally subject to penalties.

[7] Polluters are only required to report emissions events if they result in pollution releases that exceed thresholds established by law. Applicable reporting thresholds are listed at 30 Tex. Admin. Code § 101.1(89).

[8] Savanna Strott, *There are No Real Consequences for Toxic Events*, Texas Observer, August 15, 2022. Available electronically at: https://www.texasobserver.org/emissions-events-chemical-release-tceq/; Environment Texas, *Illegal Air Pollution in Texas, 2020*, October 13, 2020. Available electronically at: https://environmentamerica.org/texas/resources/illegal-air-pollution-in-texas-2020-2/; Gabriel Clark-Leach, Luke Metzger, *Breakdowns in Enforcement*, July 7, 2017. Available electronically at: https://environmentalintegrity.org/wp-content/uploads/2017/02/Breakdowns-in-Enforcement-Report.pdf

[9] According to the TCEQ's rules, polluters must make the following 11 demonstrations to be eligible for protection under the affirmative defense: (1) the emissions event was timely and accurately reported to the TCEQ; 2) the pollution release was caused by a sudden, unavoidable breakdown beyond the control of the owner or operator; 3) the pollution release could not have been foreseen and avoided or planned for, and could not have been avoided by better operation and maintenance practices or technically feasible design consistent with good engineering practice; 4) pollution control equipment and processes were maintained and operated in a manner consistent with good practice for reducing pollution and the number of emissions events; 5) prompt action was taken to achieve compliance once the operator knew or should have known about an illegal pollution release and any repairs were made as expeditiously as practicable; 6) the amount and duration of any illegal pollution release were minimized and all possible steps were taken to minimize the pollution's impact on air quality; 7) all monitoring systems were kept in operation if possible; 8) actions in response to the illegal pollution release were documented contemporaneously with the event; 9) the illegal pollution release was not part of a frequent or recurring pattern indicative of inadequate design, operation, or maintenance; 10) the percentage of a facility's total annual operating hours during which illegal pollution releases occurred was not unreasonably high; and 11) the illegal pollution release did not cause or contribute to an exceedance of federal air quality standards or to a condition of air pollution. 30 Tex. Admin. Code § 101.222(b).

[10] 30 Tex. Admin. Code § 101.223(a)(1), (2).
[11] *Id*. at § 101.223(b).
[12] A nonattainment area is an area that is failing to comply with health-based National Ambient Air Quality Standards ("NAAQS") established by EPA.
[13] Thomas O McGarity, Karen Sokol, *Man Made Disaster: Texas's Failure to Protect its Citizens from the Perils of the Houston Petrochemical Complex*, A Center for Progressive Reform White Paper, September 2006 at 6-7. Available electronically at: https://cpr-assets.s3.amazonaws.com/documents/HPC_605.pdf
[14] Administrative Order on Consent, *In the Matter of TPC Group LLC*, Docket No. CAA-06-2022-3364, August 31, 2022 at ¶ ¶ 42-50.
[15] 30 Tex. Admin. Code § 101.1(28). An "upset" is defined to mean an "unplanned and unavoidable breakdown or excursion of a process or operation that results in unauthorized emissions." Id. at § 101.1(110).
[16] Id. at § 101.1(110).
[17] The affirmative defense criteria for upsets are listed at 30 Tex. Admin. Code § 101.222(b). Similar criteria for unplanned maintenance, startup, or shutdown activities are listed at 30 Tex. Admin. Code § 101.222(c).
[18] Sunset Advisory Commission Staff Report with Commission Decisions, Texas Commission on Environmental Quality and Texas Low-Level Radioactive Waste Disposal Compact Commission for the 88th Legislature at 37. Link: https://www.sunset.texas.gov/public/uploads/2022-12/TCEQ%20Staff%20Report%20with%20Commission%20Decisions_11-22-22.pdf
[19] *Luminant Generation Co. LLC v. EPA*, 714 F.3d 841, 854 (5th Cir. 2013) ("The EPA's reasoning [for its approval of Texas's affirmative defense] relies on the fact that the narrowly tailored affirmative defense presents a high burden for any company seeking entitlement to it.").
[20] Sunset Advisory Commission, Staff Report, Texas Commission on Environmental Quality and Texas Low-Level Radioactive Waste Disposal Compact Commission ("Sunset Report"), 2022-2023 88th Legislature at 37. Available electronically at: https://www.sunset.texas.gov/public/uploads/2022-05/Texas%20Commission%20on%20Environmental%20Quality%20Staff%20Report_5-25-22.pdf
[21] *Id*.
[22] *See* note 1, *supra*.
[23] Sunset Report with Commission Decisions at A3. Available electronically at: https://www.sunset.texas.gov/public/uploads/2022-11/TCEQ%20Staff%20Report%20with%20Commission%20Decisions_11-22-22_fixed.pdf at A3
[24] Environment Texas, "Major Malfunction: Air Pollution from Industrial Malfunctions and Maintenance in Texas in 2017," January 2019; Gabriel Clark-Leach, Luke Metzger, *Breakdowns in Enforcement* at 12, July 7. 2017 https://environmenttexas.org/sites/environment/files/reports/TX_MajorMal_scrn.pdf; Sour Wind in West Texas," The Environmental Integrity Project at 1, May, 09, 2019. https://environmentalintegrity.org/reports/sour-wind-in-west-texas/
[25] Petition for Reconsideration of Air Quality Designation for Ector County, Texas for the 2010 Sulfur Dioxide Primary National Ambient Air Quality Standard—Round 3; Final Rule, EPA-HQ-OAR-2017-0003; FRL-9972-73-OAR, October 22, 2020. Available electronically at: https://environmentalintegrity.org/wp-content/uploads/2020/10/Petition-for-Reconsideration_Odessa-Texas-SO2-NAAQS_Oct2020.pdf
[26] 30 Tex. Admin. Code § 101.1 (28), (109), (110).
[27] As of the release of this report, the TCEQ does have two pending enforcement actions against sources in this table: Johnson GBSA Unit CB, 2021-0896-AIR-E and Rhodes Cowden Unit Central Battery, 2021-0962-AIR-E.
[28] Environmental Integrity Project letter to EPA, titled "Repeated Violations of Texas Permit by Rule Requirements by Permian Basin Sources," on March 31, 2021. Link: https://environmentalintegrity.org/wp-content/uploads/2023/03/Permian-PBR-letter.pdf
[29] *See e.g.* TCEQ Compliance Alert: Guide to Oil and Gas Emissions Events, available electronically at: https://www.tceq.texas.gov/downloads/assistance/industry/oil-gas/og-ee-compliance-alert.pdf
[30] *See e.g.* 42 U.S.C. § 7410(a)(2)(C), (D).
[31] TCEQ, Fact Sheet : PSD and Nonattainment, APD-ID168v1.0 at 2, Revised November 2022.
[32] 30 Tex. Admin. Code §§ 116.12(20)(A), 116.150(d)(3).
[33] Application for Amendment of Texas Commission on Environmental Quality Air Quality Permit No. 100114 – Project Updates, Freeport LNG Liquefaction Plant at Appendix B, August 5, 2022.

[34] Application for Amendment of Texas Commission on Environmental Quality Air Quality Permit No. 104840/N170 – Project Updates, dated August 5th, 2022.
[35] A video of the explosion with testimony from community members is available electronically on Enough is Enough LNG's website: https://lngisnotsafe.com/?utm_campaign=C%26S%20%7C%20LNG_Export%20Safety%202022&utm_source=twitter&utm_medium=social
[36] Agreed Order, *In the Matter of an Enforcement Action Concerning Freeport LNG Development*, Docket No. 2021-0284-AIR-E. Available electronically at: https://www14.tceq.texas.gov/epic/CIO/index.cfm?fuseaction=search.download&agy_dkt_num_txt=2021-0284-AIR-E&agenda_dt=12/14/2021; Agreed Order, *In the Matter of an Enforcement Action Concerning Freeport LNG Development*, Docket No. 2021-0917-AIR-E. Available electronically at: https://www14.tceq.texas.gov/epic/CIO/index.cfm?fuseaction=search.download&agy_dkt_num_txt=2021-0917-AIR-E&agenda_dt=03/29/2022.
[37] *See* notes 2 and 3, *supra*.
[38] Texas's regulations incorporate the BACT requirement found at 40 C.F.R. § 52.21(b)(12). 30 Tex. Admin. Code § 116.160(c)(1)(A). A control that effectively controlled one pollutant, but caused emissions of a different, more dangerous pollutant to increase might be rejected as BACT due to collateral impacts.
[39] *See* notes 2 and 3, *supra*.
[40] Proposal for Decision, SOAH Docket No. 582-22-0201, TCEQ Docket No. 2021-0942-AIR at 34-37. Available electronically at: https://www14.tceq.texas.gov/epic/eCID/index.cfm?fuseaction=main.download&doc_id=947540102022140
[41] It is still an issue for minor projects, which are subject to a state law requirement to use top-tier controls unless they are economically unreasonable. 30 Tex. Admin. Code § 116.10(1) (defining state law technology-based control requirement: "An air pollution control method for a new or modified facility that through experience and research, has proven to be operational, obtainable, and capable of reducing or eliminating emissions from the facility, and is considered technically practical and economically reasonable for the facility. The emissions reduction can be achieved through technology such as the use of add-on control equipment or by enforceable changes in production processes, systems, methods, or work practice.").
[42] Statement of Texas Commission on Environmental Quality Executive Director Toby Baker.
[43] 42 U.S.C. § 7412(b)(1).
[44] U.S. Chemical Safety Board and Hazard Investigation Board, Fires and Explosions at TPC Group Port Neches Operations Facility, Factual Update at 2, dated October 29, 2020. "In addition to its flammability, 1,3-butadiene is also highly reactive, with several undesirable reactions. In the presence of oxygen, butadiene readily reacts to form a butadiene peroxide. Butadiene peroxides, which are denser than 1,3-butadiene, will separate out and form a second liquid phase. If enough butadiene peroxides become concentrated, a critical mass is achieved which can initiate a fire or explosion. Another potential undesirable reaction that can occur between oxygen and 1,3-butadiene is the formation of popcorn polymer. Popcorn polymer, if left uninhibited, grows exponentially. When popcorn polymer growth is left unabated inside process equipment, the accumulated material can generate very high pressure inside the equipment and can ultimately lead to equipment rupture."
[45] *Id*. at 3-4.
[46] TCEQ STEERS Report, Incident No. 325683. Link: https://www2.tceq.texas.gov/oce/eer/index.cfm?fuseaction=main.getDetails&target=325683
[47] U.S. Chemical Safety and Hazard Investigation Board, Investigation Report: Popcorn Polymer Accumulation, Pipe Rupture, Explosions, and Fires at TPC Group Chemical Plant Butadiene Unit: Final Report, published December 2022 ("Final Report") at 6. Available electronically at: https://www.csb.gov/assets/1/6/tpc_group_final_report_2022-12-14.pdf
[48] For example, the report determined that TPC's Process Hazard Analysis team recommended maintenance that could have helped prevent the incident. TPC's Port Neches Operations team accepted the recommendation and assigned an implementation due date of December 7, 2016 and marked the action item completed on April 4, 2019, but the action item was never actually completed. Id. at 7, 31-32

[49] EJSCREEN-report in folder
[50] This information was taken from TPC's Clean Air Act Risk Management Plan for its Houston Plant. The portion of this plan referenced in this report is designated confidential under federal law, but may be accessed by members of the public in a Federal Reading Room. Information about how to access this information is available online at: https://www.epa.gov/rmp/federal-reading-rooms-risk-management-plans-rmp
[51] *Id.*
[52] Executive Director's Amended Response to Public Comment, Application by TPC Group LLC, Houston Plant, Docket No. 2021-1422-AIR at 29-34. Available electronically at: https://www14.tceq.texas.gov/epic/eCID/index.cfm?fuseaction=main.download&doc_id=868458262022005&doc_name=Amended%20RTC%2022052%2C%20PSDTX1578%2C%20N286%2C%20GHGPSDTX201%2C%2046307%2C%20PSDTX1580%2C%20N288%2C%20GHGPSDTX202%2C%2046426%2C%20PSDTX999M1%2C%20N290%2C%20GHGPSDTX203%2C%2019806%2C%20AND%20PSDTX1586%2Epdf&act_action=MAILED&requesttimeout=5000.
[53] *Id.* at 30-32.
[54]Agreed Order, *In the Matter of an Enforcement Action Concerning TPC Group LLC*, Docket No. 2018-0557-AIR-E. Available electronically at: https://www14.tceq.texas.gov/epic/CIO/index.cfm?fuseaction=search.download&agy_dkt_num_txt=2018-0557-AIR-E&agenda_dt=06/12/2019 The TCEQ has levied fines for other kinds of violations at the Houston plant and for some emissions events occurring prior to 2017.
[55] Administrative Order on Consent, *In the Matter of TPC Group LLC*, Docket No. CAA-06-2022-3364 at 8, dated August 20, 2022.
[56] *Id.* at 8-9.
[57] *Id.* at 8, 10-13.
[58] *Id.* at 10-13.
[59] 30 Tex. Admin. Code § 101.223.
[60] 30 Tex. Admin. Code § 101.222(a)(1).
[61] Reportable quantities are specified at 30 Tex. Admin. Code § 101.1(89).
[62] The following tables reflect data for calendar year 2022, as it was made available to the public by January 11th, 2023.
[63] A list of Hazardous air pollutants regulated under the Clean Air Act is available electronically at: https://www.epa.gov/haps/initial-list-hazardous-air-pollutants-modifications#mods
[64] *See e.g.,* Particle Pollution and Your Health, EPA. Available electronically at: https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P1001EX6.txt
[65] "Sour Wind in West Texas," The Environmental Integrity Project, May 9, 2019. https://environmentalintegrity.org/reports/sour-wind-in-west-texas/