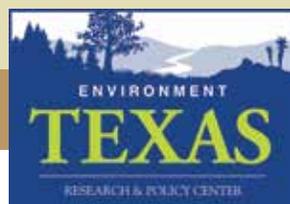




# Major Malfunction

**Air Pollution from Industrial Malfunctions and  
Maintenance in Texas in 2017**



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Luke Metzger and Grant Durow, Environment Texas

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Cover: Valero oil refinery in Port Arthur, Texas. Credit: Environmental Integrity Project/Garth Lenz, International League of Conservation Photographers

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# Executive Summary

Industrial facilities in Texas continue to violate their Clean Air Act permits by releasing large amounts of air contaminants during “emissions events” or “upsets” — the regulatory terms used to describe unauthorized emissions from equipment breakdowns, process malfunctions, operator errors or maintenance work.

Emissions events are supposed to be accidental, unanticipated releases of air pollution. However, the data show that these events occur so frequently as to be almost routine at some facilities, and often involve large releases of health threatening pollution. A recent study found that **emissions events in Texas lead to the premature deaths of at least 16 people and \$148 million in health-related costs per year.**<sup>1</sup>

According to reports filed by companies through the State of Texas Electronic Emissions Reporting System (STEERS) in 2017<sup>2</sup>, **275 companies reported 4,067 breakdowns, maintenance incidents, and other emissions events that resulted in the release of more than 63 million pounds of illegal air pollution.**

Some pollutants, including benzene and particulate matter, are especially harmful to human health. Two Houston-area facilities — Magellan’s Galena Park Terminal and Dow’s Freeport chemical plant — took the top two spots statewide for unauthorized releases of benzene, a known carcinogen.

Photo: Staff



Dow Chemical  
Company,  
Freeport, Texas.

**Table ES-1: Top 10 Emitters of Benzene During Malfunction and Maintenance<sup>4</sup>, 2017**

Rank	Facility Name	Facility Owner	County	Total Pounds
1	Galena Park Terminal	Magellan Terminals Holdings, Seaway Pipeline Inc., KM Liquids Terminals LLC	Harris	12,835
2	Dow Texas Operations Freeport	The Dow Chemical Company	Brazoria	8,870
3	Flint Hills Resources Port Arthur Facility	Flint Hills Resources Port Arthur, LLC	Jefferson	6,712
4	Big Tony Compressor Station	MarkWest Energy East Texas Gas Company	Panola	4,797
5	Chevron Phillips Chemical Cedar Bayou Plant	Chevron Phillips Chemical Company	Harris	4,215
6	Shell Oil Deer Park	Shell Oil Company and Shell Chemical LP	Harris	4,156
7	Equistar Corpus Christi Plant	Equistar Chemicals, LP	Nueces	4,030
8	Exxon Mobil Chemical Baytown Olefins Plant	Exxon Mobil Corporation	Harris	3,604
9	Silvertio 76 17 Unit P 1H	Anadarko E&P Onshore LLP	Loving	2,338
10	Parks Compressor Station	Targa Pipeline Mid-Continent WestTex LLC	Midland	2,274

Valero’s Port Arthur refinery had the highest unauthorized emissions of particulate matter, linked to a range of cardiovascular problems, including heart attacks, strokes, and congestive heart failure<sup>3</sup>, followed by Arkema’s Crosby chemical plant and Phillips 66’s oil refinery in Borger.

Members of the public submitted hundreds of complaints to the Texas Commission on Environmental Quality (TCEQ) regarding emissions events in 2017<sup>5</sup>. In one case, after the Seminole Gas Processing Plant in west Texas reported an unauthorized release of more than 1.1 million pounds of sulfur dioxide over the course

Photo: Environmental Integrity Project/Garth Lenz, International League of Conservation Photographers



Valero oil refinery in Port Arthur, Texas.

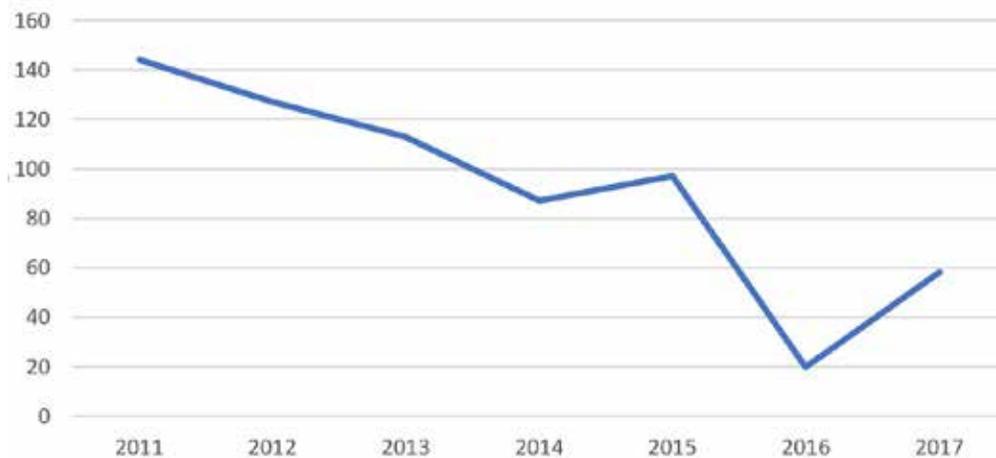
**Table ES-2: Top 10 Emitters of Particulate Matter During Malfunction and Maintenance, 2017**

Rank	Facility Name	Facility Owner	County	Total Pounds
1	Valero Port Arthur Refinery	The Premcor Refining Group Inc.	Jefferson	287,810
2	Arkema Crosby Plant	Arkema Inc.	Harris	20,180
3	Borger Refinery	Phillips 66 Company	Hutchinson	12,033
4	Pasadena Refining System	Pasadena Refining System Inc.	Harris	11,958
5	Sweeny Refinery	Phillips 66 Company	Brazoria	9,921
6	Valero McKee Refinery	Diamond Shamrock Refining Company, LP	Moore	9,851
7	Western Refining El Paso	Western Refining Company, LP	El Paso	3,308
8	Marshall Plant	Cabot Norit Americas, Inc.	Harrison	3,186
9	Owens Corning Insulating Systems Waxahachie Plant	Owens Corning Insulating Systems, LLC	Ellis	2,145
10	ISP Technologies Texas City Plant	ISP Technologies Inc.	Galveston	1,921

of sixteen days<sup>6</sup>, **a complaint was filed with the TCEQ alleging that the emissions were “impacting children at a summer camp.”**<sup>7</sup>

Despite the thousands of violations totaling hundreds of millions of pounds of unauthorized pollution, and despite hundreds of citizen complaints, the vast major-

**Figure ES-1. Enforcement Actions Against Emissions Events 2011-2017**



ity of violations escape any consequence. The **TCEQ levied financial penalties against just 58 facilities in 2017**<sup>8</sup>. Looking back over the last seven years, the total number of enforcement orders filed by TCEQ is less than 3 percent of the total number of emissions events recorded by the agency in that time. The trend since 2011 is that enforcement actions are declining.

In the few cases when fines are issued at all, the fines are on average a fraction of what TCEQ is authorized to levy. Under state law, TCEQ is authorized to collect penalties as high as \$25,000 per day per violation<sup>9</sup>.

- If TCEQ levied the maximum penalty against emissions events in 2017, using the agency's practice of counting each 24-hour period of an event as a single violation regardless of how many individual pollutants were released, they could have collected at least \$277 million in fines.
- If instead the TCEQ followed the practice of the EPA and the Texas Attorney General's Office and counted each pollutant released during

an emissions event as a separate violation<sup>10</sup>, a practice called "speciation," TCEQ could collect as much as \$2.3 billion in fines for 2017 emissions events.

TCEQ has wide discretion in determining the amount of a penalty and rarely assesses the maximum. The agency's penalty policy<sup>11</sup> directs staff to calculate a penalty based on factors including the degree of harm and a facility's past record of compliance. In 2017, TCEQ levied a total of \$1,281,047 in fines for emissions events<sup>12</sup>, or \$0.02 per pound of unauthorized emissions.

To fill the void, environmental groups and local governments in Texas have been forced to file suit to enforce air pollution limits when the government fails to do so.

- Last year, Petrobras's Pasadena Refining Systems, Inc. — which had ranked number one in Texas for unauthorized releases of particulate matter in 2016 according to a 2017 study<sup>13</sup> — settled a lawsuit with Environment Texas and the Sierra Club, agreeing to reduce emissions events and

Photo: Staff



Pasadena Refining  
Systems Incorporated,  
Pasadena, Texas.

pay a \$3.5 million penalty<sup>14</sup>. Since our first analysis of emissions events in 2016 and since the citizen lawsuit was filed against it, Petrobras has reduced its unauthorized emissions of particulate matter by 83%.

- Harris County District Attorney Kim Ogg filed criminal charges against the CEO and plant manager of Arkema's Crosby, Texas, facility for "recklessly" releasing chemicals into the air during Hurricane Harvey.<sup>15</sup> According to reports the company filed with TCEQ, Arkema emitted more than 20,000 pounds of particulate matter during Hurricane Harvey, second highest in the state in 2017.

A 2001 legislative analysis suggested, "the frequency of unplanned upset events raises concerns that the upsets may be part of normal operating procedures."<sup>16</sup> These events are largely preventable and should not be tolerated as normal operating procedures.

In order to reduce illegal air pollution and hold violators accountable, the state should:

- Develop a plan to reduce emissions events and increase compliance
- Adopt mandatory minimum penalties for emissions events
- Eliminate the "affirmative defense" from penalties that is offered to polluters

- Revoke a facility's permit after repeated violations until the facility implements plans to return to compliance
- Require sources operating under a standard permit or permit by rule ("PBR") to obtain a source-specific New Source Review permit and/or a Title V operating permit when emissions events cause source emissions to exceed standard permit/PBR limits or Title V major source threshold
- Establish additional monitors, including SO<sub>2</sub> monitors in the Permian basin, to accurately measure air quality impacts from unauthorized emissions from industrial sources

At the national level:

- Congress should reject efforts to weaken or eliminate the ability of citizen groups to sue to enforce environmental laws when government agencies are not enforcing the law
- Congress should maintain, and increase, funding for enforcement by the EPA
- EPA should maintain, and vigorously defend in court, its requirement that states strengthen rules dealing with emissions from equipment startups, shutdowns, and malfunctions.

# Air Pollution in Texas

Despite significant progress, air pollution levels in many parts of Texas still threaten public health.

- Researchers at the Massachusetts Institute of Technology found in a 2013 study that more than 14,000 Texans lose their lives each year due to air pollution, including 3,583 Texans who die prematurely due to particulate matter released by authorized and unauthorized industrial emissions.<sup>17</sup> A 2018 study published by the American Chemical

Society looked specifically at unauthorized pollution during emissions events and found that they result in the premature deaths of at least 16 people and \$148 million in health costs in Texas on average per year.<sup>18</sup>

- According to the UT School of Public Health, children living within two miles of the heavily industrialized Houston Ship Channel face a 56 percent greater risk of contracting leukemia, which researchers link to oil refineries and chemical plants.<sup>19</sup>

Photo: Alamy



Shell Oil Deer  
Park facility

Reports filed with the TCEQ in 2017 demonstrate that many Texans are concerned about emissions events.

- A resident of west Texas contacted TCEQ on June 16 alleging that emissions from the James Lake Gas Plant and Seminole Gas Processing Plant in Ector and Gaines Counties, respectively, are “impacting children at a summer camp.”<sup>20</sup> Indeed, the Seminole Gas Processing Plant reported a release of 1,192,726 pounds of sulfur dioxide on June 15.<sup>21</sup> This event was one of the largest emissions events contributing to Seminole Gas Processing Plant’s status as the second-largest unauthorized emitter of sulfur dioxide in Texas in 2017. James Lake Gas Plant released 21,249 pounds of sulfur dioxide during an emissions event lasting from June 12 to June 15.<sup>22</sup>
- A resident of Houston wrote to TCEQ on October 16 that, “In light of the large number and amount of pollutants released during Hurricane/Tropical Storm Harvey (not to mention the delay in publicly reporting them), I think the EPA and especially TCEQ have lost a lot of trust with the people of Texas. Please enforce the Clean Air Act and hold these companies responsible to stay within the limits allowed by the permits they hold.”<sup>23</sup> Exxon-Mobil’s Baytown Refinery and Shell Oil’s Deer Park facility both reported emissions events on October 15 while Chevron Phillips’s Chemical Cedar Bayou Plant reported an event on October 16.<sup>24</sup>
- On September 19, a resident of Port Arthur filed a complaint with TCEQ “stat[ing] that a tank at Valero exploded and was on fire” and that “odors were coming from the fire.”<sup>25</sup> This complaint was filed on the exact same day that Valero Port Arthur Refinery, owned by the Premcor Refining Group Inc., reported a major emissions event resulting from a tank fire. This event released 286,284 pounds of particulate matter, making it one of the largest particulate matter emissions events of the year.<sup>26</sup>
- Dow Texas Operations Freeport, owned by the Dow Chemical Company and located in Brazoria County, had a significant ongoing emissions event from December 4 to December 12. This event resulted in the release of 24,233 pounds of carbon monoxide, 5,214 pounds of nitrogen oxide, and 329 pounds of benzene.<sup>27</sup> A citizen wrote TCEQ on December 8 that “we live within 5 miles of the Dow Freeport site and not only is the air quality horrible, the cancer rate is one of the highest in the country.”<sup>28</sup>

# Top Polluters During Emissions Events

According to the TCEQ, “emissions events are upset events or unscheduled MSS (Maintenance, Startup and Shutdown) activities from a common cause that result in unauthorized emissions of air contaminants.”<sup>29</sup>

According to a study by researchers at Indiana University, emissions events result when “pollution abatement systems — such as scrubbers, baghouses, or flares that curtail emissions before they are released—fail to fully operate as the result of an unexpected malfunction, startup or shutdown,”<sup>30</sup> resulting in the release of illegal air pollution. They may be a result of equipment breakdowns, process malfunctions or operator error or may occur during the startup and shutdown of equipment. In a 1982 memo, EPA’s Assistant Administrator for air wrote that while there are circumstances where startups and shutdowns might legitimately result in emissions, “startup and shutdown of process equipment are part of the normal operation of a source and should be accounted for in the design and implementation of the operating procedure for the process and control equipment. Accordingly, it is reasonable to expect that careful planning will eliminate violations of emission limitations during such periods.”<sup>31</sup>

Emissions events are largely avoidable. Rather than flaring<sup>32</sup> excess gases at facilities, permittees can capture and recycle most gases with a gas recovery system. If flaring took place only during serious emer-

gencies, there would be a significant reduction in air emissions. Second, companies can increase staffing and preventive maintenance, and provide better training to allow for further monitoring of leaks, equipment malfunctions, and other potential sources of emissions, and ensure faster responses when emissions events do occur. Finally, companies should improve and expand upon backup systems, including backup power sources, to reduce the impact of events like electrical failures and major weather events that might otherwise require equipment shut-downs and start-ups.

Under Texas law, companies must create an “emissions event” report each time a plant has an unauthorized release of air pollution, whether the event is caused by a malfunction or a planned activity such as equipment maintenance. Companies must file their reports within 24 hours of when the pollution event occurs.<sup>33</sup> The Texas Commission on Environmental Quality requires companies to publicly disclose upset events that release a “reportable” quantity of pollutants via the State of Texas Environmental Electronic Reporting System (STEERS). These reports are available on the TCEQ’s Air Emission Event Report database at: <http://www2.tceq.texas.gov/oce/eer/>.

An initial report must be filed within 24 hours, and a final report within two weeks. Emissions events below the reporting threshold, known as “record-

able emission events,” are to be recorded and kept in documents held on-site at the facility.

This analysis is drawn only from self-reported violations that were submitted, via STEERS, to the TCEQ. The numbers *do not* include emissions from the unreported “recordable emissions events,” and thus actually under-represent the amount of illegal air pollution released in Texas.

Different air contaminants harm people and the environment in different ways, and so this report presents six separate snapshots, each one a “top 10” list based on different pollutants of concern. The rankings below show the state’s top ten industrial plants responsible for the highest levels of self-reported air

pollution from malfunctions and maintenance for six pollutants of concern: sulfur dioxide, hydrogen sulfide, nitrogen oxides, benzene, particulate matter, and volatile organic compounds.

## Benzene

Benzene is a dangerous volatile organic compound released into the air from many industries that use, store, or produce petroleum products, including fuel, chemicals, plastics, and pesticides. Short-term exposure to benzene can lead to dizziness, rapid or irregular heartbeat, tremors, unconsciousness and, at high levels, even death. Longer term exposure to benzene can cause leukemia, birth defects, low birth weight, and bone marrow damage.<sup>34</sup> A 2010

**Table 1: Top 10 Emitters of Benzene During Malfunction and Maintenance<sup>37</sup>, 2017**

Rank	Facility Name	Facility Owner	County	Total Pounds
1	Galena Park Terminal	Magellan Terminals Holdings, Seaway Pipeline Inc., KM Liquids Terminals LLC	Harris	12,835
2	Dow Texas Operations Freeport	The Dow Chemical Company	Brazoria	8,870
3	Flint Hills Resources Port Arthur Facility	Flint Hills Resources Port Arthur, LLC	Jefferson	6,712
4	Big Tony Compressor Station	MarkWest Energy East Texas Gas Company	Panola	4,797
5	Chevron Phillips Chemical Cedar Bayou Plant	Chevron Phillips Chemical Company	Harris	4,215
6	Shell Oil Deer Park	Shell Oil Company and Shell Chemical LP	Harris	4,156
7	Equistar Corpus Christi Plant	Equistar Chemicals, LP	Nueces	4,030
8	Exxon Mobil Chemical Baytown Olefins Plant	Exxon Mobil Corporation	Harris	3,604
9	Silvertio 76 17 Unit P 1H	Anadarko E&P Onshore LLP	Loving	2,338
10	Parks Compressor Station	Targa Pipeline Mid-Continent WestTex LLC	Midland	2,274



**Dow Texas  
Operations Freeport,  
Brazoria County,  
Texas**

study by the University of Texas School of Public Health and the Texas Department of State Health Services found that women living in neighborhoods with higher-than-average levels of benzene are more likely to give birth to babies with serious neurological defects.<sup>35</sup> The World Health Organization warns that there is no safe level of benzene exposure.<sup>36</sup>

**Nitrogen Oxides (NO<sub>x</sub>)**

According to the National Institutes for Health<sup>38</sup>, breathing nitrogen oxides can cause a range of health effects, including aggravation of asthma, nausea and headaches. Nitrogen oxides also combine with volatile organic compounds and sunlight to form ground-level ozone, commonly known as smog. Smog causes a host of respira-

**Table 2: Top 10 Emitters of Nitrogen Oxides During Malfunction and Maintenance, 2017**

Rank	Facility Name	Facility Owner	County	Total Pounds
1	Goldsmith Gas Plant	DCP Operating Company	Ector	167,837
2	Equistar Corpus Christi Plant	Equistar Chemicals LP	Nueces	90,362
3	James Lake Gas Plant	James Lake Midstream, LLC	Ector	88,383
4	Enterprise Mont Belvieu Complex	Enterprise Products Operating LLC	Chambers	84,243
5	Dow Texas Operations Freeport	The Dow Chemical Company	Brazoria	77,939
6	Chevron Phillips Chemical Cedar Bayou Plant	Chevron Phillips Chemical Company LP	Harris	77,620
7	Midkiff Gas Plant	Targa Pipeline Mid-Continent WestTex LLC	Reagan	72,326
8	Exxon Mobil Baytown Refinery	Exxon Mobil Corporation	Harris	68,448
9	Denver Unit CO2 Recovery Plant	Occidental Permian Ltd.	Yoakum	55,115
10	Driver Gas Plant	Targa Pipeline Mid-Continent WestTex LLC	Midland	51,609



Valero oil refinery in Port Arthur, Texas.

tory consequences, ranging from coughing, wheezing and throat irritation, to asthma, increased risk of infection, and permanent damage to lung tissue.<sup>39</sup> Enterprise’s Mont Belvieu Complex, Dow’s Freeport facility, Chevron Phillips Cedar Bayou plant, and ExxonMobil’s Baytown complex, all located in the Houston Galveston nonattainment area for ozone<sup>40</sup>,

were among the top unauthorized polluters of nitrogen oxides in 2017.

### Particulate Matter

Particulate matter (PM), commonly called soot, is one of the deadliest forms of air pollution. It can trigger a range of cardiovascular problems, including heart

**Table 3: Top 10 Emitters of Particulate Matter During Malfunction and Maintenance, 2017**

Rank	Facility Name	Facility Owner	County	Total Pounds
1	Valero Port Arthur Refinery	The Premcor Refining Group Inc.	Jefferson	287,810
2	Arkema Crosby Plant	Arkema Inc.	Harris	20,180
3	Borger Refinery	Phillips 66 Company	Hutchinson	12,033
4	Pasadena Refining System	Pasadena Refining System Inc.	Harris	11,958
5	Sweeny Refinery	Phillips 66 Company	Brazoria	9,921
6	Valero McKee Refinery	Diamond Shamrock Refining Company, LP	Moore	9,851
7	Western Refining El Paso	Western Refining Company, LP	El Paso	3,308
8	Marshall Plant	Cabot Norit Americas, Inc.	Harrison	3,186
9	Owens Corning Insulating Systems Waxahachie Plant	Owens Corning Insulating Systems, LLC	Ellis	2,145
10	ISP Technologies Texas City Plant	ISP Technologies Inc.	Galveston	1,921

attacks, strokes, and congestive heart failure<sup>41</sup>. These problems can result in increased hospital admissions or premature death.<sup>42</sup> Particulate matter also contributes to acid rain and haze in national parks.

A 2015 study found that PM emissions from emissions events in Houston appear to be rising since 2009, possibly due to the rise in shale gas development.<sup>43</sup>

### Volatil Organic Compounds (VOCs)

Volatil Organic Compounds (VOCs) are a class of chemicals that includes many different hazardous air pollutants and known carcinogens. The primary sources of VOC emissions are petroleum refineries, chemical plants, and oil and gas extraction and processing operations. According to the National

Institutes of Health, short-term exposure to volatile organic compounds may 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.<sup>44</sup> VOCs are also a key component of ozone or smog. The Magellan Galena Park Terminal, Shell Deer Park refinery, and Chevron Phillips Chemical Cedar Bayou Plant, in the Houston Galveston nonattainment area for ozone<sup>45</sup>, and the Flint Hills Port Arthur facility, located in the Beaumont Port Arthur ozone nonattainment area<sup>46</sup>, were among the top unauthorized polluters of volatile organic compounds in 2017.

**Table 4: Top 10 Emitters of Volatil Organic Compounds During Malfunction and Maintenance, 2017**

Rank	Facility Name	Facility Owner	County	Total Pounds
1	Silvertio 76 17 Unit P 1H	Anadarko E&P Onshore LLC	Loving	1,987,839
2	Galena Park Terminal	Magellan Terminals Holdings LP, KM Liquids Terminal LLC, Seaway Pipeline Inc.	Harris	1,616,068
3	Parks Compressor Station	Targa Pipeline Mid-Continent WestTex LLC	Midland	1,020,745
4	Seminole Pipeline Coke County	Seminole Pipeline Company LLC	Coke	366,281
5	Formosa Point Comfort Plant	Formosa Plastics Corporation, Texas	Calhoun	346,768
6	Shell Oil Deer Park	Shell Oil Company, Shell Chemical LP	Harris	298,646
7	Flint Hills Resources Port Arthur Facility	Flint Hills Resources Port Arthur, LLC	Jefferson	276,066
8	Chevron Phillips Chemical Cedar Bayou Plant	Chevron Phillips Chemical Company LP	Harris	266,377
9	Equistar Corpus Christi Plant	Equistar Chemicals, LP	Nueces	262,242
10	Seminole Gas Processing Plant	Hess Corporation, OXY USA Inc.	Gaines	259,736

## Sulfur Dioxide

Sulfur dioxide, which comes mainly from burning fossil fuels—including flaring at oil and gas manufacturing facilities<sup>47</sup>—causes acidification of soil and water, and causes an array of respiratory problems. Studies show correlations between short-

term exposure to sulfur dioxide and increased visits to hospital emergency rooms; children, the elderly, asthmatics and those who exercise regularly are most at risk.<sup>48</sup>

**Table 5: Top 10 Emitters of Sulfur Dioxide During Malfunction and Maintenance, 2017**

Rank	Facility Name	Facility Owner	County	Total pounds
1	Mabee Ranch CO2 Plant	Chevron USA Inc.	Andrews	2,925,848
2	Seminole Gas Processing Plant	Hess Corporation, OXY USA Inc.	Gaines	2,122,943
3	JT McElroy 202 TB	Chevron USA Inc.	Crane	1,483,836
4	James Lake Gas Plant	James Lake Midstream LLC	Ector	1,214,775
5	Sealy Smith Clearfork Satellite 7	Occidental Permian Ltd.	Ward	894,695
6	Goldsmith Gas Plant	DCP Operating Company, LP	Ector	792,238
7	Sealy Smith Clearfork Satellite 3	Occidental Permian Ltd.	Ward	538,448
8	McElroy Section 199 Emergency Flare	Chevron USA Inc.	Crane	505,427
9	Sealy Smith Clearfork Satellite 8	Occidental Permian Ltd.	Ward	478,356
10	Goldsmith CO2 Pilot Phase II Facility	XTO Energy Inc.	Ector	468,752

## Hydrogen Sulfide

Hydrogen sulfide is most recognized as the “rotten egg” smell often associated with oil and gas production. According to the Agency for Toxic Substances and Disease Registry, “exposure to low concentrations of hydrogen sulfide may cause headaches, poor memory, tiredness, and balance problems,” while brief exposures to high concen-

trations of hydrogen sulfide can cause a loss of consciousness.<sup>49</sup> Because the gas is heavier than air, it can pool in low-lying areas if the wind is not blowing. In February 1975, a hydrogen sulfide release killed eight people in a home near an oil and gas production site in the small West Texas town of Denver City<sup>50</sup>.

**Table 6: Top 10 Emitters of Hydrogen Sulfide During Malfunction and Maintenance, 2017**

Rank	Facility Name	Facility Owner	County	Total Pounds
1	Mabee Ranch CO2 Plant	Chevron USA Inc.	Andrews	37,177
2	Seminole Gas Processing Plant	OXY USA Inc. Hess Corporation	Gaines	27,125
3	Exxon Mobil Baytown Refinery	ExxonMobil Corporation	Harris	16,028
4	JT McElroy 202 TB	Chevron USA Inc.	Crane	15,144
5	Kinder Morgan Production Pipeline Scurry County	Kinder Morgan Production Company LP	Scurry	13,582
6	James Lake Gas Plant	James Lake Midstream LLC	Ector	13,206
7	Sealy Smith Clearfork Satellite 7	Occidental Permian Ltd.	Ward	9,697
8	Goldsmith Gas Plant	DCP Operating Company, LP	Ector	8,841
9	Means Tank Battery 200	XTO Energy Inc.	Andrews	7,875
10	Tall Cotton Compression Station	Kinder Morgan Production Company LLC	Gaines	6,512

# Clean Air Permitting and Enforcement

Congress has declared that the purpose of the Clean Air Act (CAA) is “to protect and enhance the quality of the Nation’s air resources so as to promote the public health and welfare and the productive capacity of its population.”<sup>51</sup>

## How Texas handles emissions events

The Texas Clean Air Act<sup>52</sup>, which mirrors many aspects of the federal Clean Air Act, prohibits facilities from discharging pollutants “in such concentration and of such duration that ... are or may tend to be injurious to or to adversely affect human health or welfare, animal life, vegetation, or property.”

Under the CAA, a State Implementation Plan (“SIP”) must be developed that sets forth how the state will achieve and maintain compliance with National Ambient Air Quality Standards (“NAAQS”) set by the United States Environmental Protection Agency (“EPA”) to protect human health and the environment. As part of Texas’ obligations under its SIP, TCEQ issues to stationary sources of air pollution permits which define the maximum amount of a given pollutant each facility is allowed to release.<sup>53</sup>

Texas regulations define “unauthorized emissions” as those that “exceed any air emission limitation in a permit, rule or order of [TCEQ].”<sup>54</sup> Permits sometimes include unambiguous language stating that emissions from upset events are not authorized, even when they would otherwise fall “within the flexible permit emission cap or an individual emission limit.”<sup>55</sup> Under such permits, emissions of individual pollut-

ants during an upset event are separate violations of the prohibition against upset emissions, one for each pollutant so emitted. Under other permits, upset emissions frequently exceed the maximum hourly or annual emission limits that are intended to keep emissions from flares and other emission sources within legally required limits.

## Reportable Events and Recordable Events

Companies document emissions events in two primary ways.

First, the TCEQ requires permittees to publicly report information about “emissions events” that release greater than a certain threshold quantity of pollutants; these are called “reportable emissions events.” Permittees are required to submit this information to the TCEQ through the State of Texas Environmental Electronic Reporting System (“STEERS”). These reports are to be submitted “as soon as practicable, but not later than 24 hours after the discovery of a reportable emissions event.”<sup>56</sup> Reports are then posted on a TCEQ website the next morning and are open to the public.<sup>57</sup>

Second, the TCEQ requires permittees to document information about smaller “emissions events” that release less than the threshold quantities that trigger public reporting. Documentation of these “recordable emissions events” is kept on-site at the company’s facility, but are not submitted to the TCEQ via a STEERS report.

## Investigation, Enforcement, and Corrective Actions

TCEQ’s “Agency Philosophy”<sup>58</sup> states that it will “ensure consistent, just, and timely enforcement when environmental laws are violated,” but also that it seeks to “promote and foster voluntary compliance with environmental laws and provide flexibility in achieving environmental goals.” The data would suggest TCEQ emphasizes the latter over the former goal.

The TCEQ is supposed to investigate each reportable emissions event but, according to the Environmental Integrity Project’s Ilan Levin, the “investigations” are almost always paperwork reviews and rarely involve on-site inspections. Furthermore, the number of investigations of emissions events in FY18 declined by almost 8 percent from the previous year, even as the number of emissions events increased 12 percent and the volume of emissions increased 4.9 percent.<sup>59</sup>

Following the review of documents filed by a permittee, the TCEQ determines whether it will initiate enforcement. This determination is based, in part,

on whether the event is deemed to be “excessive” and whether the permittee has qualified for an “affirmative defense” from penalties. The affirmative defense effectively exempts facilities which exceed permit limits during emissions events from financial penalties, although a facility may still be ordered to take steps to prevent future violations.

According to the Texas Administrative Code, “Upset events that are determined not to be excessive emissions events are subject to an affirmative defense to all claims and enforcement actions brought for these events other than claims for administrative technical orders and actions for injunctive relief.”<sup>60</sup> The owner or operator must prove it has met 11 different criteria in order to qualify for the defense — including that the unauthorized emissions could not have been prevented, that all possible steps were taken to minimize the impact of the unauthorized emissions on ambient air quality, and that the emissions did not contribute to a condition of air pollution.

**Table 7: Emissions enforcement over the past 7 years**

Year	Number of emissions events	Number of events receiving TCEQ penalties	Percentage of events penalized
2011	4,266	144	3.38%
2012	3,315	127	3.83%
2013	4,844	113	2.33%
2014	4,262	87	2.04%
2015	4,432	97	2.19%
2016	3,720	20	0.54%
2017	4,069	58	1.43%
<b>Overall</b>	<b>28,908</b>	<b>646</b>	<b>2.23%</b>

When permittees file a report of an emissions event to STEERS, they must select on the reporting form either “yes” or “no” to indicate whether the permittee believes it meets the affirmative defense standard. An ExxonMobil manager testified at trial in the *Environment Texas v. ExxonMobil* case that he checks the “yes” box for every emissions event without fail, despite not actually investigating or confirming whether ExxonMobil has in fact met all 11 affirmative defense criteria.<sup>61</sup>

As TCEQ’s follow-up investigation almost always relies primarily on a review of documents filed by the permittee, it is very difficult for the investigator to then prove that the permittee is not eligible for the affirmative defense.

The U.S. Environmental Protection Agency found that the affirmative defense serves as a barrier to effective oversight of polluting industries. In June 2015, the EPA directed Texas and 35 other states to revise their SIPs to eliminate these affirmative defense provisions.<sup>62</sup> The TCEQ ignored EPA’s directive and retained the affirmative defense criteria, while adding a new paragraph to the rule stating that the listed affirmative defense criteria “are not intended to limit a federal court’s jurisdiction or discretion to determine the appropriate remedy in an enforcement action.”<sup>63</sup>

Even if a company claims an affirmative defense, TCEQ can still determine that an emissions event was “excessive,” based on a set of standards laid out in the agency’s Enforcement Initiation Criteria, including the frequency, cause, quantity, impact, and duration of an emissions event.<sup>64</sup> In that case, TCEQ will not accept an affirmative defense. In FY18, TCEQ determined that just 13 emissions events were excessive, down from 14 in FY17.<sup>65</sup>

If TCEQ determines there was a violation resulting from an emissions event and the affirmative defense criteria have not been met, it may (but is not required to) issue a Notice of Violation (NOV), a written

notification to the permittee. NOVs set “a prescribed time period [for the permittee] to return to compliance and provide documentation that all violations have been corrected.”<sup>66</sup> TCEQ tells permittees that the agency “may elect to visit the site and verify that the violations have been corrected, or it may be enough for you to submit documentation to us.” If TCEQ is satisfied that all violations have been corrected, no enforcement action is taken.<sup>67</sup>

If violations are not corrected in time, the permittee may then be issued a Notice of Enforcement (NOE), and TCEQ may try to negotiate a financial penalty with the company. The TCEQ has authority to issue administrative enforcement orders (without filing a lawsuit in court) and is able to seek penalties up to the statutory cap of \$25,000 per day<sup>68</sup>, although fines rarely if ever are that high. Generally, TCEQ will negotiate an “agreed order” in which the permittee “agrees to the terms and conditions of the administrative order, including the penalty.”<sup>69</sup> TCEQ may also refer cases to the Office of the State Attorney General, which may elect to pursue civil or criminal action through the courts.

## Few violations result in penalties

In 2017, there were 4,067 reported unauthorized emissions events across the state of Texas which resulted in the release of hundreds of millions of pounds of dangerous pollutants<sup>70</sup>. The TCEQ only levied penalties against 58 emissions events (most if not all of which occurred before 2017). Looking back over the last seven years, the total number of enforcement orders filed by TCEQ is less than 3 percent of the total number of emissions events recorded by the agency in that time.<sup>71</sup>

The trend since 2011 shows that enforcement actions are declining.<sup>72</sup>

In the few cases when fines are issued at all, the fines are on average a fraction of what TCEQ is authorized to levy.

- If TCEQ levied the maximum penalty against emissions events in 2017, using the agency’s practice of counting each event as a single violation regardless of how many individual pollutants were released, they could have collected at least \$277 million in fines.
- If instead the TCEQ followed the practice of the EPA and the Texas Attorney General’s Office and counted each pollutant released during an emissions event as a separate violation<sup>73</sup>, a practice called “speciation,” TCEQ could collect as much as \$2.3 billion in fines for 2017 emissions events.<sup>74</sup>

TCEQ has wide discretion in determining the amount of a penalty and rarely assesses the maximum. The agency’s penalty policy<sup>75</sup> directs staff to calculate a penalty based on factors including the degree of harm and a facility’s past record of compliance. In 2017, a total of \$1,281,047 was assessed in administrative penalties for these 58 emissions events, amounting to \$0.02 per pound of unauthorized emissions in 2017.

The small size of TCEQ’s fines is often dwarfed by the huge size of the companies being penalized.

For example, in an administrative order last year, the TCEQ addressed two separate emissions events caused by the petrochemical company Chevron

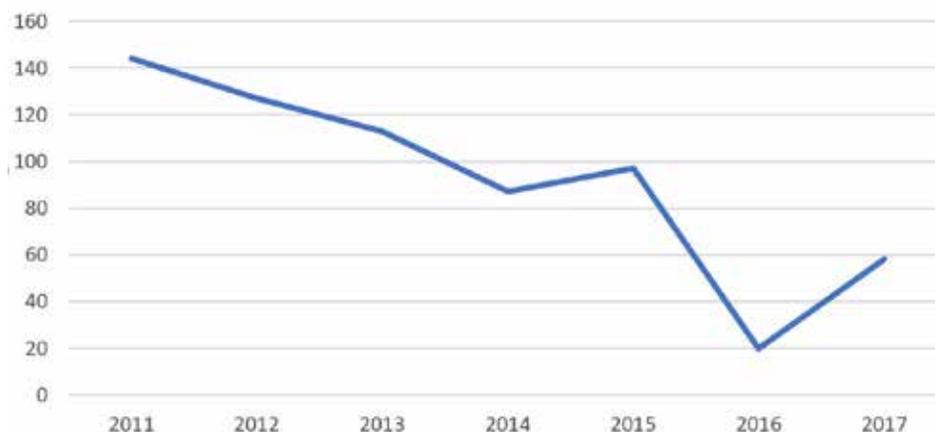
Phillips in May and June of 2016. These two events released a combined amount of 8,302 pounds of volatile organic compounds, 8,622 pounds of toxic carbon monoxide, and 1,745 pounds of dangerous nitrogen oxides. Despite releasing a combined total of 18,671 pounds of hazardous pollutants, the company was assessed only a \$9,038 administrative penalty by TCEQ for the release of these toxic compounds.

To put that number into perspective, that meant that Chevron Phillips was fined about \$0.48 per pound of illegal emissions. Furthermore, Chevron Phillips reported a total sales revenue of approximately \$9 billion in 2017. The penalty imposed on it by the TCEQ accounted for less than 0.0001% of its total sales revenue in 2017.

As this example demonstrates, even in the relatively rare instances when the TCEQ does take action against unauthorized emissions, the agency’s efforts remain lackluster and ineffective in punishing polluters to a degree that would deter them from committing future infractions.

An example of how this insufficient level of enforcement contributes to continued emissions events can be seen in the case of the Houston-based petrochemical company Phillips 66. While the TCEQ did as-

**Figure 1: Enforcement Actions Against Emissions Events 2011-2017**



sess penalties for several infractions by the company in 2016, the penalty did not successfully deter the company from committing future violations. Despite receiving a \$19,688 administrative penalty in May of 2017 for two emissions events that had occurred on January 9 and April 14 in 2016, facilities operated by Phillips 66 still went on to illegally emit thousands of pounds of pollutants in 2017.<sup>76</sup> For example, on May 16, 2017, less than a week after being notified of this administrative penalty, Phillips 66's Borger Refinery in Hutchinson County released 2,677 pounds of sulfur dioxide without permit authorization. If anything, one could argue that the TCEQ's spotty record of penalizing companies for emissions events has emboldened permittees to continue their violations with little fear of meaningful repercussions.

TCEQ has noted that "equitable treatment requires that violators not come out ahead economically to the disadvantage of those entities that spend substantial resources to comply with the law,"<sup>77</sup> but in some cases, penalties issued by TCEQ are less than the economic benefit the company gained as a result of the violation. For example, in an Agreed Order adopted on Sep. 26 2017, the TCEQ found that Intercontinental Terminals Company in Harris County "failed to prevent unauthorized emission of 1,509 pounds of benzene from a storage tank."<sup>78</sup> The emissions event began on February 12, 2016 and lasted 125 hours and 30 minutes. This event occurred due to a tank deformation that allowed fluid displacement above the internal floating roof, resulting in the release of pressure into the tank lateral piping and diffuser. Since the emissions event was reported late, the Respondent is precluded from asserting an affirmative defense under 30 Tex. Admin. Code § 101.222. TCEQ determined the company enjoyed an economic benefit of \$6,902, but levied a fine of just \$3,983.<sup>79</sup>

In a 2003 review of TCEQ enforcement<sup>80</sup>, the Office of the State Auditor found the agency "does not consistently ensure violators are held accountable" and that "violators often have economic benefits that exceed their penalties, which could reduce their incentive

to comply." In response, TCEQ launched a review of its enforcement program and penalty policy, but according to former TCEQ Commissioner Larry Soward, appointed by Governor Perry in 2003, "little came of that self review."<sup>81</sup>

A February 2018 analysis by the Texas Observer found that when the TCEQ does take enforcement action, it disproportionately targets small businesses, such as family-owned gas stations, while mostly turning a blind eye to major pollution events caused by large oil and gas corporations.<sup>82</sup>

## Enforcement under attack

Given the TCEQ's failure to consistently hold polluters to account, citizen groups and local governments have stepped up to enforce state and federal clean air laws themselves. The Clean Air Act contains a "citizen suit" provision that allows private citizens affected by violations of the law (or the non-profit groups to which they belong) to bring an enforcement suit in federal court. They can file such public interest enforcement cases after first providing 60 days prior notice to the violator and to state and federal environmental agencies, to give the government a chance to bring the enforcement case itself.

If the government does not file its own enforcement case within the 60-day notice period, citizens can then seek a court order requiring compliance with the law and a monetary penalty of up to \$93,750 per day for each violation of the Act<sup>83</sup>. Since 2008, environmental groups in Texas have successfully sued at least 4 facilities over illegal air pollution resulting from emissions events.

The Texas Clean Air Act also allows local governments to file suit against polluters. For example, Harris County has sued dozens of facilities over various pollution violations<sup>84</sup>.

In response, polluters have worked to change the law to shield themselves from these lawsuits. In 2015, Governor Abbott signed HB 1794 into law, which

sets a five-year statute of limitations and a \$4.3 million cap on penalties on pollution lawsuits brought by local governments, split between the local and state government. And in 2017, Governor Abbott signed HB 2533 into law, which requires local governments to notify the TCEQ and state Attorney General 90 days in advance of a suit.<sup>85</sup> If the state government chooses to initiate its own enforcement proceedings, the local government is preempted from moving forward with its own suit.

Bills have also been filed in the United States Congress to shield polluters. For example, according to the Waterkeeper Alliance, HR 1179, the so-called “Discouraging Frivolous Lawsuits Act,” introduced in February 2017 by Rep. Tom Rice (R-SC), would create

a new requirement for the citizen to pay the defendant’s attorney fees if the citizen did not ultimately prevail in court, forcing would-be plaintiffs to risk financial ruin by filing good-faith citizen suits<sup>86</sup>.

As mentioned previously, in 2015 EPA directed 36 states, including Texas, to remove affirmative defenses from their SIPs. Industry groups sued to block the EPA’s action, but in April 2017 the new Trump Administration leadership at the EPA asked the DC Circuit Court of Appeals to delay oral arguments over the SIP call so it could “reconsider all or part” of the rule. In July, EPA officials met to discuss, among other things, “initiating” the rule’s withdrawal.<sup>87</sup>

## The environmental impact of Hurricane Harvey

In an August 2018 report<sup>88</sup>, the Environmental Integrity Project estimated that about 8.3 million pounds of air pollution were released by industrial facilities immediately before, during, and after Hurricane Harvey. The Houston region experienced the largest share of this pollution, apparently as a result of industrial facilities waiting too long to shut down. EIP wrote that “in the Corpus Christi area, on August 24, the day after Gov. Abbott declared a “State of Disaster,” industry minimized air pollution releases by proactively shutting plants before the rain even started falling. By contrast, in the Houston region, industries waited for more than three days until heavy rains started falling before taking action to shut down, and then suffered larger pollution releases because of flooding and blackouts. In the 48 hours after the heavy rainfall started in the Houston area, a total of 23 incidents were reported to the state that released 2.2 million pounds of pollution.”

# Conclusions and Recommendations

Air pollution spikes resulting from malfunctions and maintenance events – because they can release large amounts of pollutants in a short amount of time – are especially harmful to people and the environment. Allowing industries to pollute the air with impunity erodes the public’s confidence in the agencies charged with protecting our health, while at the same time providing no incentive for polluters to clean up.

State and federal officials have the tools they need to protect our health and our environment from dangerous air pollution. They can do more to hold accountable the industrial plants that routinely release excessive air pollution as a result of preventable malfunctions and maintenance activities. Consistent and robust enforcement of laws already on the books is the most direct and effective way to rein in rogue polluters.

Congress has also empowered citizens to take enforcement actions to clean up air pollution when the government agencies charged with protecting the air we breathe fail to do their jobs. Until the TCEQ improves its enforcement, citizen groups should exercise this right and file citizen suits to force polluters and scofflaws to install modern pol-

lution control equipment and pay meaningful penalties for air pollution violations.

Companies should not be allowed to use malfunctions and maintenance as a blanket excuse to spew unlimited amounts of dangerous pollutants into the air we Texans breathe without serious consequences or accountability. Strict and consistent enforcement of permit limits will not only create a financial incentive for industries to better maintain their plants and invest in modern equipment, but also protect public health and the environment.

In order to reduce illegal air pollution and hold violators accountable, the state should:

- Develop a plan to reduce emissions events and increase compliance
- Adopt mandatory minimum penalties for emissions events
- Eliminate the “affirmative defense” from penalties that is currently available to polluters
- Revoke a facility’s permit after repeated violations until the facility implements plans to return to compliance

- Require sources operating under a standard permit or permit by rule (“PBR”) to obtain a source-specific New Source Review permit and/or a Title V operating permit when emissions events cause source emissions to exceed standard permit/PBR limits or Title V major source threshold
- Establish additional monitors, including SO<sub>2</sub> monitors in the Permian basin, to accurately measure air quality impacts from unauthorized emissions from industrial sources

At the national level:

- Congress should reject efforts to weaken or eliminate the ability of citizen groups to sue to enforce environmental laws
- Congress should maintain, and increase, funding for enforcement by the EPA
- EPA should maintain, and vigorously defend in court, its requirement that states strengthen rules dealing with equipment malfunctions and maintenance startups, shutdowns, and malfunctions.

# Methodology and Data

This report ranks the state’s worst air polluters based on companies’ self-reports of emissions of air pollution from malfunctions and maintenance. This report is based on analysis of the reports filed with the State of Texas Electronic Emissions Reporting System (STEERS) for 2017. This data is publicly accessible (<http://www2.tceq.texas.gov/oce/eer/>) and allows members of the public to track unauthorized releases of air pollution by county, or from any facility of interest. We followed the same methodology as in the 2017 report *Breakdowns in Enforcement* by Environmental Integrity Project and Environment Texas.

The Environmental Integrity Project obtained this data from the Texas Commission on Environmental Quality (TCEQ) via a February 27, 2018 Public Information Act request. EIP then reviewed the data and removed duplicate entries and obvious errors. EIP then graciously provided the data to Environment Texas Research and Policy Center, which used it to calculate regional and statewide tallies.

For this report, we analyzed the most recent full year, 2017, for which information is available for emissions events. While the details of each of the thousands of self-reported emissions events have not yet been verified by state regulators, our analyses of these reports and of the raw emissions data – self-reported

by companies – that they contain is clear evidence of rampant and ongoing air pollution violations.

This report only looks at unplanned emissions events and not at routine emissions. Company self-reported data can be subject to reporting errors, although the STEERS system allows companies two weeks to make any corrections to entries made in their initial reports. And in some cases, facilities will make changes to their “final” reports well after the two-week deadline. In mid-November 2018, Environment Texas Research and Policy Center spot-checked data regarding especially large emissions events in the spreadsheet from EIP against the online STEERS system to capture any late changes.

Additionally, previous research has documented both under-reporting of emissions<sup>89</sup>, for example of particulate matter, and over-reporting<sup>90</sup> (by including routine emissions along with those from emissions events).

All the rankings in this report, including our use of terms such as “top” or “worst” polluters, are based on company self-reports of emissions from their own malfunctions, start-up and shut-down events, and maintenance events. We also chose to combine similar or similarly named pollutant categories (e.g., tallies of nitrogen oxides include nitrogen oxide,

nitrous oxides, nitrogen dioxide, nitrogen monoxide and other variations) to most accurately represent the total impact of each category of pollution. The category of volatile organic compounds (VOCs) is based on a list from TCEQ obtained at <http://www.tceq.texas.gov/assets/public/implementation/air/ie/pseiforms/contams.xlsx>. Additional information about chemicals that are VOCs was included from the Centers for Disease Control's *Glossary of Volatile Organic Compounds* (<https://www.cdc.gov/nceh/clusters/fallon/glossary-voc.pdf>); Gang Wang et al., "Characteristics and Source Apportionment of VOCs in the Suburban Area of Beijing, China," *Atmospheric Pollution Research*, 7(4):711-724, July 2016, available at (<https://www.sciencedirect.com/science/article/pii/S1309104215300386>); and Hy-Bon's *The ABCs of VOC Emissions from Quad O Facilities* (<https://hy-bon.com/blog/voc-emissions-from-quad-o-facilities/>) to confirm that "non-methane non-ethane natural gas" reported in the STEERS data is VOCs. We did not include reported emissions of "natural gas" in our tally.

To calculate TCEQ's enforcement rates, we started by reviewing the list of STEERS reports for 2017 provided to us by Environmental Integrity Project. We then found the annual administrative air enforcement tables attached to TCEQ's FY17 Annual Enforcement Report<sup>91</sup> and used the docket numbers listed in the tables to download each air enforcement order from the TCEQ's Integrated Database: <http://www14.tceq.texas.gov/epic/eCID/>. However, this report only covered the Fiscal Year 2017, so an open records request was submitted to and fulfilled by the TCEQ to obtain all the air enforcement orders issues from September through December of 2017.

Next, we determined which emissions event(s), if any, was addressed by each enforcement order. This was done by searching each individual enforcement order for an incident number connected to a specific STEERS event. These numbers are typically found within parentheses in either the "Findings of Fact" or "Allegations" sections of the enforcement order. Enforcement orders that did not have a specific

STEERS incident number in their report and were not connected to an emissions event were then not included in administrative penalty calculations. We also learned directly from TCEQ that no civil or criminal enforcement actions were filed in court by the State of Texas in 2017.

Using this information, we calculated the percentage of reported events that were subject to enforcement for 2017. This was done by taking the total number of air enforcement orders issued in 2017 that addressed a specific emissions event and comparing that number to the total number of STEERS air emissions events taking place in 2017. The total number of STEERS emissions events in 2017 was calculated from data obtained from the TCEQ by the Environmental Integrity Project. Enforcement rates for prior years were calculated in the 2017 report *Breakdowns in Enforcement* by Environmental Integrity Project and Environment Texas.

Top 10 lists in this document were determined by using the 2017 events report in the STEERS data obtained and cleaned by EIP and spot-checked by Environment Texas Research & Policy Center against the online STEERS records. We used the pivot table function in Excel to tally emissions from each facility for each pollutant and rank the highest-emitting facilities.

To identify the most polluting facilities for each TCEQ enforcement region were identified by using the "TCEQ Region" column to select for the facilities in each region. Total emissions from each facility were tallied and facilities were ranked.

We calculated possible fines, we first divided the "duration (hours)" column by 24 to calculate the duration in days of each pollution event. We rounded those incidents up to the nearest whole number (ex. 25 hours equals 2 days). Then we estimated fines in two ways:

- 1) The method of EPA and the Texas Attorney General where the \$25,000 per day cap is applied against each pollutant in each 24 hour period. The number

of pollutants emitted over each time frame (<1 day, 2 days, 3 days, etc.) were totaled and multiplied by \$25,000 and the number of days they were emitting a pollutant to find the maximum fine TCEQ could have imposed.

2) TCEQ's method where the \$25,000 per day cap is applied against each 24 hour period of an individual emissions event regardless of the number of pollutants released.

For the minimum or TCEQ method of assessing fines, we pulled out all the "complaint incident numbers" and removed all the duplicates using Excel's "remove duplicates" function so that each incident number

appeared once. Then we matched each incident number with the duration in days that we calculated. We summed the number of incident days and multiplied that by \$25,000.

After Environmental Integrity Project and Environment Texas published our 2017 report Breakdowns in Enforcement, which first found that TCEQ issues fines against fewer than 3 percent of emissions events, TCEQ staff responded to the media by stating that 7 percent of events receive Notices of Violations (NOVs). As discussed earlier in the report, NOVs do not include financial penalties, and thus are not included in our percentage of emissions events receiving fines.

# Appendix:

## Tables of Worst Polluters

### Statewide and by Metro Area

**Table 8: Top 10 Malfunction and Maintenance Polluters, 2017**

Rank	Facility Name	Facility Owner	County	Total Pounds
1	Waha Header Compressor Station	Trans-Pecos Pipeline, LLC	Pecos	3,882,744
2	Mabee Ranch CO2 Plant	Chevron USA, Inc.	Andrews	3,259,671
3	Seminole Gas Processing Plant	Hess Corporation, OXY USA Inc.	Gaines	3,029,793
4	Galena Park Terminal	Magellan Terminals Holding, LP	Harris	2,529,318
5	Silvertio 76 17 Unit P 1H	Anadarko E&P Onshore LLC	Loving	2,156,133
6	ExxonMobil Beaumont Refinery	ExxonMobil Oil Corporation	Jefferson	1,737,392
7	James Lake Gas Plant	James Lake Midstream LLC	Ector	1,573,139
8	JT McElroy 202 TB	Chevron USA Inc.	Crane	1,530,642
9	Parks Compressor Station	Targa Pipeline Mid-Continent WestTex LLC	Midland	1,377,095
10	Goldsmith Gas Plant	DCP Operating Company, LP	Ector	1,141,200

**Table 9: Regions with the most unauthorized pollution, 2017**

Rank	TCEQ region name and number	Total pounds
1	Midland (Region 7)	37,660,671
2	Houston (Region 12)	9,051,114
3	Beaumont (Region 10)	5,328,702
4	Lubbock (Region 2)	2,996,222
5	Corpus Christi (Region 14)	2,592,411
6	San Angelo (Region 8)	2,484,304
7	Amarillo (Region 1)	899,381
8	Waco (Region 9)	659,997
9	Abilene (Region 3)	644,497
10	Laredo (Region 16)	617,702
11	Tyler (Region 5)	536,939
12	San Antonio (Region 13)	132,741
13	Dallas-Fort Worth (Region 4)	78,737
14	Austin (Region 11)	35,347
15	Harlingen (Region 15)	31,434
16	El Paso (Region 6)	23,288
	<b>Total</b>	<b>63,773,498</b>

**Table 10: Worst polluters in the Amarillo area (Region 1)**

Rank	Facility Name	Facility Owner	County	Total Pounds
1	Agrium US Borger Nitrogen Operations	Agrium US Inc.	Hutchinson	292,617
2	DCP Midstream Ochiltree County Pipeline	DCP Operating Company LP	Ochiltree	107,185
3	Rock Creek Gas Plant	DCP Operating Company LP	Hutchinson	101,290
4	Vent Booster Station	DCP Operating Company LP	Moore	58,794
5	Sid Richardson Carbon Borger Plant	Sid Richardson Carbon, Ltd.	Hutchinson	51,319

**Table 11: Worst polluters in the Lubbock area (Region 2)**

Rank	Facility Name	Facility Owner	County	Total Pounds
1	Denver Unit CO <sub>2</sub> Recovery Plant	Occidental Permian Ltd.	Yoakum	824,153
2	Slaughter Gasoline Plant	Occidental Permian Ltd.	Hockley	479,457
3	Cornell Field Flare Site	XTO Energy Inc.	Yoakum	452,183
4	Willard CO <sub>2</sub> Separation Plant	Oxy USA WTP LP; Occidental Permian Ltd.	Yoakum	340,515
5	Mallet CO <sub>2</sub> Recovery Plant	Occidental Permian Ltd.	Hockley	233,331

**Table 12: Worst polluters in the Abilene area (Region 3)**

Rank	Facility Name	Facility Owner	County	Total Pounds
1	Sacroc Carbon Dioxide Treatment Plant	Kinder Morgan Production Company LLC	Scurry	153,882
2	Kinder Morgan Production Pipeline Scurry County	Kinder Morgan Production Company LP	Scurry	132,641
3	Salt Creek Gas Plant	Oxy USA WTP LP	Kent	111,228
4	Louis Dreyfus Pipeline Callahan County	Louis Dreyfus Pipeline LP	Callahan	55,524
5	Bowie Compressor Station	Davis Gas Processing Inc.	Montague	32,053

**Table 13: Worst polluters in the Dallas-Fort Worth area (Region 4)**

Rank	Facility Name	Facility Owner	County	Total Pounds
1	Munson Compressor Station	Targa Midstream Services LLC	Denton	34,916
2	West Johnson County Compressor Station	Cowtown Gas Processing Partners LP	Johnson	16,902
3	Wylie Water Plant	North Texas Municipal Water District	Collin	16,472
4	Versacold Logistics Services	Versacold Texas LP	Tarrant	2,358
5	Owens Corning Insulating Systems Waxahachie Plant	Owens Corning Insulating Systems, LLC	Ellis	2,145

**Table 14: Worst polluters in the Tyler area (Region 5)**

Rank	Facility Name	Facility Owner	County	Total Pounds
1	Enable Gas Transmission Pipeline Cass County	Enable Gas Transmission, LLC	Cass	238,987
2	Pittsburg Gas Plant	Enbridge G&P LP	Camp	146,084
3	Duke Energy Field Services Pipeline Panola County	DCP Operating Company LP	Panola	35,784
4	Marshall Plant	Cabot Norit Americas, Inc.	Harrison	27,140
5	Enbridge Pipelines NE Texas Pipeline Panola County	Enbridge Pipelines (NE Texas) L.P.	Panola	21,849

**Table 15: Worst polluters in the El Paso area (Region 6)**

Rank	Facility Name	Facility Owner	County	Total Pounds
1	Western Refining El Paso	Western Refining Company LP	El Paso	12,603
2	Newman Power Station	El Paso Electric Company	El Paso	5,506
3	Capitan Compressor Station	Delaware Basin Midstream LLC	Culberson	5,164

**Table 16: Worst polluters in the Midland-Odessa area (Region 7)**

Rank	Facility Name	Facility Owner	County	Total Pounds
1	Waha Header Compressor Station	Trans-Pecos Pipeline LLC	Pecos	3,882,744
2	Mabee Ranch CO <sub>2</sub> Plant	Chevron USA Inc.	Andrews	3,259,671
3	Seminole Gas Processing Plant	Hess Corporation OXY USA Inc.	Gaines	3,029,793
4	Silvertio 76 17 Unit P 1H	Anadarko E&P Onshore LLC	Loving	2,156,133
5	James Lake Gas Plant	James Lake Midstream LLC	Ector	1,573,139

**Table 17: Worst polluters in the San Angelo area (Region 8)**

Rank	Facility Name	Facility Owner	County	Total Pounds
1	Seminole Pipeline Coke County	Seminole Pipeline Company LLC	Coke	465,280
2	Midkiff Gas Plant	Targa Pipeline Mid-Continent WestTex LLC	Reagan	395,968
3	Big Lake Treating Facility	Davis Gas Processing Inc.	Reagan	370,621
4	Saxon Booster	Benedum Gas Partners LP Wtg South Permian Midstream LLC	Reagan	330,660
5	West Merchant CTB	Occidental Permian Ltd.	Reagan	254,269

**Table 18: Worst polluters in the Waco area (Region 9)**

Rank	Facility Name	Facility Owner	County	Total Pounds
1	Aker Plant	Enbridge Pipelines (East Texas) LP	Freestone	513,588
2	Iron Duke 3H Facility	New Gulf Resources LLC	Madison	85,083
3	ETC Texas Pipeline Burleson County	ETC Texas Pipeline Ltd.	Burleson	36,975
4	Long Point Compressor Station	DCP Operating Company LP	Washington	14,086
5	Owens Brockway Glass Container	Owens-Brockway Glass Container Inc.	McLennan	7,060

**Table 19: Worst polluters in the Beaumont area (Region 10)**

Rank	Facility Name	Facility Owner	County	Total Pounds
1	ExxonMobil Beaumont Refinery	ExxonMobil Oil Corporation	Jefferson	1,737,392
2	Valero Port Arthur Refinery	The Premcor Refining Group Inc.	Jefferson	986,172
3	Port Arthur Refinery (RN100209451)	Motiva Enterprises LLC	Jefferson	662,654
4	Flint Hills Resources Port Arthur Facility	Flint Hills Resources Port Arthur LLC	Jefferson	581,093
5	Port Arthur Refinery (RN102457520)	Total Petrochemicals & Refining USA, Inc.	Jefferson	490,490

**Table 20: Worst polluters in the Austin area (Region 11)**

Rank	Facility Name	Facility Owner	County	Total Pounds
1	Flag Pond Booster	DCP Operating Company, LP	Lee	23,634
2	Luling Gas Plant	Davis Gas Processing, Inc.	Caldwell	6,108
3	Bastrop Pump Station	Magellan Crude Oil Pipeline Company LP	Bastrop	1,808
4	Sand Hill Energy Center	City of Austin DBA Austin Energy	Travis	1,550
5	Austin White Lime McNeil Plant and Quarry	Austin White Lime Company	Travis	1,200

**Table 21: Worst polluters in the Houston/Galveston area (Region 12)**

Rank	Facility Name	Facility Owner	County	Total Pounds
1	Galena Park Terminal	Magellan Terminals Holdings, Seaway Pipeline Inc., KM Liquids Terminals LLC	Harris	2,529,318
2	Chevron Phillips Chemical Cedar Bayou Plant	Chevron Phillips Chemical Company LP	Harris	820,475
3	Exxon Mobil Baytown Refinery	Exxon Mobil Corporation	Harris	805,174
4	Chocolate Bayou Plant	Ineos USA LLC	Brazoria	719,293
5	Dow Texas Operations Freeport	The Dow Chemical Company	Brazoria	696,744

**Table 22: Worst polluters in the San Antonio area (Region 13)**

Rank	Facility Name	Facility Owner	County	Total Pounds
1	Bowman West 141H 146H Production Facility	Texas American Resources Operating Company	Atascosa	36,091
2	Schorp-White 3H Production Facility	Cabot Oil and Gas Corporation	Frio	23,104
3	CGT New Braunfels	CGT US Limited	Comal	11,351
4	Pickens B 2H et al Production Facility	Cabot Oil and Gas Corporation	Frio	11,145
5	Pearsall Compressor Station	Enterprise Products Operating LLC	Frio	6,482

**Table 23: Worst polluters in the Corpus Christi area (Region 14)**

Rank	Facility Name	Facility Owner	County	Total Pounds
1	Formosa Point Comfort Plant	Formosa Plastics Corporation, Texas	Calhoun	1,073,736
2	Equistar Corpus Christi Plant	Equistar Chemicals LP	Nueces	885,858
3	Valero Corpus Christi Refinery West Plant	Valero Refining-Texas LP	Nueces	156,254
4	Javelina Gas Processing Facility	MarkWest Javelina Company LLC	Nueces	76,199
5	Citgo Corpus Christi Refinery West Plant	CITGO Refining and Chemicals Company L.P.	Nueces	59,598

**Table 24: Worst polluters in the Harlingen area (Region 15)**

Rank	Facility Name	Facility Owner	County	Total Pounds
1	Duke Energy Field Services Pipeline Brooks County	DCP Operating Company LP	Brooks	30,746
2	8000 Series Terminal	TransMontaigne Operating Company LP	Cameron	655

**Table 25: Worst polluters in the Laredo area (Region 16)**

Rank	Facility Name	Facility Owner	County	Total Pounds
1	Freer 44 Compressor Station	Enterprise Products Operating LLC	Webb	153,492
2	Briscoe Chupadera CPF C	SN EF Maverick LLC	Webb	125,489
3	Big Cowboy Compressor Station	ETC Texas Pipeline, Ltd.	Duval	113,459
4	Yarbrough 110H-116H Production Facility	Texas-American Resources Operating Company	La Salle	53,628
5	Tilden Gas Plant	ETC Field Services LLC	McMullen	46,418

**Table 26: Total emissions per year 2015-2017**

Year	Total pounds of emissions	Percent change from previous year
2015	84,095,686	
2016	50,248,782	-40%
2017	63,773,498	+27%
<b>Total</b>	<b>198,117,966</b>	

As in years past, many significant emissions events in 2017 did not occur in short bursts. Many took place over long periods of time and were the result of inaction by facility owners. These events could last for months on end before these owners took action to stop these particularly damaging long-term events.

**Table 27: Top 10 Longest Emissions Events, 2017**

Rank	Facility Name	Facility Owner	County	Event Start Date	Event End Date	Total Hours
1	Seminole Gas Processing Plant	OXY USA Inc.	Gaines	3/22/17	8/12/17	3,432
2	Port Arthur Refinery (RN102457520)	Total Petrochemicals & Refining USA, Inc.	Jefferson	9/23/17	2/9/18	3,338
3	Arkema Crosby Plant	Arkema Inc.	Harris	12/11/17	3/28/18	2,569
4	Sealy Smith Clearfork facilities	Occidental Permian Ltd.	Ward	5/12/17	8/27/17	2,568
5	F Foster Satellite 1	Occidental Permian Ltd.	Ector	6/28/17	10/9/17	2,475
6	Port Arthur Facility	German Pellets Texas LLC	Jefferson	4/16/17	7/21/17	2,304
7	Bennett Ranch Central Tank Battery	Occidental Permian Ltd.	Yoakum	2/1/17	5/5/17	2,226
8	BASF Beaumont Argo Plant	BASF Corporation	Jefferson	2/20/17	5/10/17	1,889
9	Bastrop Pump Station	Magellan Crude Oil Pipeline Company, LP	Bastrop	7/13/17	9/28/17	1,856
10	Waha Header Compressor Station	Trans-Pecos Pipeline LLC	Pecos	10/5/17	11/30/17	1,343

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