

AN INVISIBLE POISON: OIL & GAS AIR EMISSIONS



‘Upset’ emissions: Flares in the air, worry on the ground

BATON ROUGE, La. — Shirley Bowman noticed the smell after 8 a.m. on June 14, 2012, her 61st birthday. In Baton Rouge, where the petrochemical industry dominates the landscape, foul odors resembling burnt rubber or propane are perennial. But this odor, caustic and potent, seemed especially foul — “like some sort of chemical,” she recalls.

Bowman found her daughter crying over a migraine. Her neighbors experienced headaches, dizziness, nausea.

One family reported a toddler son coughing up phlegm; another, an elderly father collapsing on the floor. She soon suspected the cause: A leak of “steam-cracked” naphtha, a liquid mixture of volatile petrochemicals, occurring at the ExxonMobil Baton Rouge petrochemical complex a half mile away.

Four hours earlier, Exxon operators detected an odor in the East area tank field, and discovered a “bleeder” valve on Tank 801 dripping naphtha into a sewer. The leaky valve dumped 411 barrels into the underground system, company records filed with the state show. The liquid traveled a mile before pouring into a separator pit, vaporizing along the way, and releasing tens of thousands of pounds of benzene and other toxic chemicals into the air.

What happened that day in Baton Rouge is one thread of a larger story about the often toxic, sometimes hidden releases emanating from oil refineries, chemical plants and other industrial facilities along the chemical corridor of Louisiana and Texas. Those unplanned emissions — known in regulatory parlance as “upsets” — are occurring more often than industry admits or government knows, according to more than 50 interviews with regulators, activists, plant representatives, workers and residents, and an analysis of tens of thousands of records by the Center for Public Integrity.

For many communities, these upsets have evolved into an invisible menace: They disrupt lives, yet offenders are rarely punished.

In Texas, where activists have clamored for relief, state officials say enforcement efforts helped reduce incidents by 6 percent in the most recent year of reporting; Louisiana officials cite a 41 percent decrease since 2008.

Yet those numbers tell only part of the story. The mass of pollution emitted in Texas, the nation's refinery hub, hit a five-year peak in 2011, the Center found — so even as the number of reported events dipped, the amount of pollution increased. And, experts say upset releases are consistently underreported. For communities straddling industry fence lines, worry and fear remain in the air. This hidden pollution can produce harm. Over the last five years, records show, upset events have yielded almost four million pounds of toxic air pollutants in Texas alone — the 189 chemicals deemed so harmful to health Congress sought to bring emissions under control two decades ago. That's two percent of all upset emissions.

“These are a major public health threat,” acknowledges Larry Soward, a former commissioner at the Texas Commission on Environmental Quality, who served on its board from 2003 to 2009.

“Upsets” occur when equipment breaks down or production units are shut off, restarted and repaired; or, as regulations state, when there's an “unavoidable” accident.

Under law, plant managers must notify officials when accidental releases exceed certain hazardous air thresholds. In Baton Rouge, Exxon did this. Yet its numbers kept escalating.

At 5:10 a.m. that day, Exxon supervisors told the state the benzene leak would likely exceed the 10 pound reportable quantity. Within hours, they classified it “level 2,” barricading areas and monitoring the air. According to a call log, company officials found benzene levels “so high” bordering a rail yard, they advised the railroad “not to let anyone go through that area.” By 12:30 p.m., the company was testing 400 workers for exposure to the cancer-causing chemical. The following day, Exxon reported that benzene emissions totaled 1,364 pounds during the leak’s first three hours. By June 20, it increased the number to 28,688 pounds. In its final report filed 60 days later, Exxon revealed the benzene total was actually 31,022 pounds — nearly four times what the refinery released in upset events in eight years, according to company reports compiled by the nonprofit Louisiana Bucket Brigade. State regulators later deemed the leak “preventable,” issuing an enforcement order contending that Exxon “failed to provide notification of a change in the nature and rate of the discharge.” Exxon doesn’t dispute the leak was preventable. But the company, saying it accurately reported the release, is appealing the state’s order. While plant supervisors acknowledge the “large” leak, they say it didn’t threaten residents.

Tests along the fence line showed “no community impact,” their records state; air sampling by regulators back up the company.

“It was a large number. We regret that number,” says Derek Reese, Exxon Baton Rouge’s environmental manager. “But we believe we did an appropriate response to mitigate the impact.”

That’s little consolation to residents, like Bowman. “Everything seems to stop at that magical gate,” she says, motioning to Exxon’s South Gate adjoining her neighborhood. “But if you live here, you know. Chemicals are let out on you.”

Upsets plague plant, community — time and again

Last spring’s valve leak has played out again and again at the sprawling, 2,400-acre ExxonMobil Baton Rouge complex, which encompasses an oil refinery and a chemical plant, and dwarfs the Standard Heights community. The leak marks the 1,068th upset emissions event at the compound in the last eight years, according to a database of incident reports compiled by the Bucket Brigade. Of these events, 172 involved benzene, a carcinogen that can trigger headaches, dizziness and rapid heart rate.

Exxon’s chemical plant had 265 of all incidents. At the refinery, the data show 803 accidental releases over these years; at its height, the facility averaged two a week. ExxonMobil Baton Rouge questions the Bucket Brigade’s analysis, calling it “likely another misrepresentation of data.”

In an email, the company criticizes the environmental group's methodology and findings, contending that incident numbers published by the group don't match the reports catalogued by the state.

The Bucket Brigade stands by its analysis, and explains that Louisiana doesn't have a standardized system for companies to report upset events. Instead, reports are filed on a rolling basis and then posted online. The steady hazards extend far beyond Baton Rouge. In the Gulf states of Texas and Louisiana, the vast number of plastics, power and gas plants provide an on-the-ground case study of a national problem.

“Non-routine” upset emissions have become regular occurrences at oil refineries, chemical plants and manufacturing facilities.

Data collected by the Texas Commission on Environmental Quality, TCEQ, offer a rare window into this pollution peril; the state agency requires companies to report events online within 24 hours, as well as annual totals.

From 2007-11, just over 2,400 of the largest facilities across Texas spewed almost 180 million pounds of upset emissions, contamination on top of the 14.8 billion pounds of routine air emissions in that time. Nearly half the facilities experienced at least one event in that period, pumping out sulfur dioxide and other smog-inducing pollutants. The greatest concentration came in 2011: 58.1 million pounds.

The 20 biggest offenders — oil refineries and natural-gas plants in Kermit, Beaumont, Corpus Christi and beyond — account for more than half of all such emissions in Texas.

“It’s a lot of stuff,” says Neil Carman, a former state air pollution inspector who investigated upset events.

Carman now heads the air program for the Sierra Club’s Lone Star chapter, which has filed several citizen lawsuits targeting illegal emissions. Two facilities the Club sued rank among the state’s top emitters: ExxonMobil, whose petrochemical complex in Baytown has released 5.1 million pounds of upsets in the five years; and Shell Oil, whose Deer Park plant has emitted 2.5 million.

Studies have also explored this problem, documenting how the releases sometimes occur every day or two, and for largely avoidable reasons: Equipment breakdowns and poor maintenance, for instance. One researcher, Texas A&M

University’s Melissa Jarrell, says they “are happening so frequently, it’s more likely companies know about the problems and know what to do to stop upsets.”

Industry portrays the discharges as an inevitable — and overwhelmingly harmless — byproduct of manufacturing. Regulators have encouraged this casual attitude, some say. For decades, the U.S. Environmental Protection Agency and state regulatory agencies have effectively ignored the emissions.

Officials don't count upset events in facility permits and compliance records, notes Kelly Haragan of the environmental law clinic at the University of Texas-Austin, because they "aren't supposed to happen." In August 2004, Haragan penned a 215-page report showing how easily facilities can get away with releasing more pollution than allowed by the federal Clean Air Act — with little to no repercussions. At times, she says, "It's like having a whole other plant no one is even acknowledging."

These incidents skirt normal pollution controls, venting through flares and leaks. Plants can have scores of events a year, giving off a constant cloud of invisible spoliation.

"A big dose of toxins are coming out of these facilities," says Soward, the former TCEQ official, who now works for Air Alliance Houston, "and into fence line communities."

The health effects are harder to measure; little research exists on the threat to residents. But recently, Dr. Mark D'Andrea, at the University of Texas Cancer Center, began tracking 4,000 residents exposed to the poster child of all upsets — the "40-day Release" at the BP refinery, in Texas City, which belched 514,795 pounds of benzene and 20 other pollutants throughout the spring of 2010. Earlier this year, D'Andrea unveiled preliminary data showing the residents have "significantly higher" white-blood cell and platelet counts than their Houston

counterparts. The data suggests BP's release may have increased their risk of developing such cancers as leukemia, the doctor says.

In a statement, BP says it does "not believe any negative health impacts resulted from" its 40-day release. "To our knowledge, the University Cancer Centers' pilot study does not support a claim for any plaintiff alleging injury from that flaring and has no relevance to those claims," the company wrote, referring to pending litigation filed by 47,830 residents and workers against BP alleging health ailments caused by the release. D'Andrea has not been hired as an expert witness for either side in the case, but has testified in pre-trial discovery.

'An Invisible Poison'

In Baytown, Texas, about 250 miles from Baton Rouge, ExxonMobil operates the nation's largest petrochemical complex, replete with an oil refinery and two chemical plants. The mass of stacks, tanks and pipes spans 3,400 acres on Houston's ship channel, looming over blue-collar neighborhoods nestled in its shadow. In Harris County, a manufacturer's Mecca, Exxon's refinery tops all 155 upset emitters, spitting out 3.8 million pounds' worth from 2007 to 2011. Its olefins plant ranks third in the county, with 1.1 million.

Here, residents describe fiery flares that have rattled windows, belched black smoke and cast a sooty substance on the ground.

At times, they've unleashed a thunderous boom, "like an Air Force fighter jet," says Shae Cotter, who lived across a highway from the complex. He remembers the sound jolting him from sleep at 3 a.m. Occasionally, he videotaped flares aglow like celestial globes, flames ballooning toward his home.

Residents say smells drive them inside. Stuart Halpryn, whose house sits a quarter mile from Exxon, says he tried to adapt to the odors, along with the runny noses and allergy-like symptoms. That changed in February 2009, he says, when his family became sick after a valve leak at the refinery. His four children suffered from such severe indigestion, he says, they missed school for a week. Later, he learned from reading Exxon's report the leak had unleashed 17,432 pounds of six different toxic chemicals.

"Nobody really understands what's being dumped on them," says Halpryn, who moved his family to Kentucky in June. "It's an invisible kind of poison that's being rained down."

The Exxon complex ranks among the state's biggest emitters of upset emissions involving carcinogens and noxious gases. Top chemicals include hydrochloric acid, 1,3-butadiene and benzene, toxins that can trigger skin irritations, respiratory problems, neurological disorders and gastro-intestinal diseases. Baytown residents Cotter and Halpryn, worried over Exxon's emissions, are witnesses in a citizen lawsuit against the company in the U.S. District Court in Houston.

The Sierra Club, along with Environment Texas, filed suit in December 2010, charging that non-routine incidents at the Baytown complex since 2005 have heaved more than eight million pounds of “unauthorized emissions.” The complaint alleges “longstanding systemic problems,” and company records revealed in court show some facility units have encountered dozens of upset events: The refinery’s Fluid Catalytic Cracker Unit 3 raked up 34 incidents from 2005 to 2011; at the olefins plant, the Cold Ends Unit has had 32.

In a statement, ExxonMobil Baytown says it has worked with regulators to “greatly” reduce emissions. “We are proud of the overall reductions we have made,” the company wrote. Since 2000, Exxon notes, it has decreased total emissions at the Baytown complex by more than 50 percent. The company declined to provide similar statistics for the facility’s upset emissions.

“ExxonMobil is committed to continuously improving the environmental performance of our Baytown Complex,” the company said.

In court records, Exxon doesn’t deny the 9,374 violations alleged by plaintiffs for “unlawful upset emissions”; they’re based on its reports cataloged with the state.

In August, the company filed a motion to dismiss the suit, contending, among other issues, that environmental groups aim to “second-guess” enforcement practices by the TCEQ. On April 3, a federal magistrate denied most of Exxon’s motion, paving the way for a possible trial.

For residents, the court proceedings might not come soon enough. Since December, the Baytown facility has set off a wave of upset emissions. One, triggered by a tripped compressor in the refinery's Booster Station Four, pumped out 114,000 pounds of sulfur dioxide in 18 hours. It was the 20th upset recorded there by company reports.

"Exxon is emitting all of these day after day," says Marilyn Kingman, a long-time resident. "Anybody who lives in the Baytown area is suffering."

Infrequent monitoring, incomplete data

The threat to fence line communities may be even greater than industry self-reports — and official data — suggest. One reason is that companies rely on infrequent air monitoring to estimate chemical emissions, including upsets. When monitors do measure toxic air pollution, they can miss the short spikes characterizing upset events. "Part of the problem with upsets," says Jarrell, of Texas A&M University, "is you're not getting a lot of true data."

Companies can misstate the magnitude of events through faulty calculations, environmental advocates argue. Formulas used to estimate what's spewed from tanks and flares are so antiquated — 19 and 20 years old, respectively — they "do an extremely poor job of predicting emissions," says Eric Schaeffer, director of the Environmental Integrity Project.

Attorneys from his nonprofit are suing the EPA to force it to update these “emissions factors.” Recent studies have shown discrepancies between what’s reported and what’s emitted.

Take the 40-day release at BP’s Texas City refinery. Plant supervisors assumed one flare had destroyed nearly 98 percent of the emissions, a regulatory requirement. Three years earlier, however, regulators concluded that, in some cases, actual emissions were six times greater than what the company reported. BP maintained it has “multiple bases for concluding that the flared hydrogen stream was well combusted.”

Others aren’t so sure.

“It’s a typical example of what goes on in these situations,” says Jim Tarr, a former Texas air regulator who serves as a consulting expert in pending lawsuits against BP over its 40-day release. “Not all companies do it this way,” he says, referring to the flaring forecast, “but a lot do.”

If the calculations seem questionable, critics say, so do all those upsets that don’t count. Company reports don’t account for unpermitted releases falling *beneath* the thresholds for reporting requirements — up to 5,000 pounds for some pollutants.

Plant supervisors must keep records detailing the events and include their emissions in annual totals, but not in incident reports. Considered “below reportable quantity,” they essentially never happened.

“That’s the bigger story on upsets,” asserts Jay DeLouche, a Lake Charles lawyer who has sued facilities over the emissions. Some managers “just determine [an upset] is below reportable quantity ... and say, ‘Nothing happened, it’s a non-event.’ ”

“Non-events” can translate into big numbers. Company records revealed in court in the ExxonMobil Baytown case show thousands more “non-reportable” emissions events than the “reportable” ones filed online with TCEQ. Filling 235 pages’ worth of documentation, the 2,158 non-events outnumber the 333 reportable events by more than six to one. In Baton Rouge, Exxon’s refinery has boasted a similarly high ratio of non-events; according to the latest data compiled by the Louisiana Bucket Brigade, the company has designated 70 percent of refinery incidents “below reportable quantity” in 2011, up from roughly 10 percent in 2005.

“We believe the refineries under-report,” says the Bucket Brigade’s Anne Rolfes. Exxon says it “is very diligent in its reporting of incidents, no matter how small.” Plant supervisors must notify authorities of events within an hour of discovery, even if the amount is unknown, the company notes; often, they must report back to regulators that “the quantity is less than initially thought.”

Over the last five years, the company says it has reduced incidents exceeding the reportable quantity at the Baton Rouge refinery by 86 percent, and at the chemical

plant by 47 percent. “We take every environmental incident seriously,” Exxon wrote. “We have a passion to reduce incidents and releases.”

Some residents and workers wonder whether ExxonMobil disclosed the massive amount of benzene released last June because regulators had swooped in to investigate. “If they could have hid it, they would have hid it,” contends Bob Landry, of the United Steel Workers Local 13-12.

The Louisiana Department of Environmental Quality is exploring that question. In their 206-page report in 2012, LDEQ inspectors determined that Exxon supervisors failed to notify the agency once they knew a “substantial amount” of benzene was emitted. An Exxon Baton Rouge environmental manager informed inspectors the company had become aware of the leak’s extent at 12:30 p.m. that first day — just seven hours after notifying the state — when its engineers calculated the vapor loss. Exxon disclosed the calculations six days later.

The agency “believes Exxon knew more about the leak than it shared with us,” says Cheryl Nolan, LDEQ’s enforcement chief. She declined to elaborate, citing the company’s appeal.

Exxon supervisors insist they intended to notify regulators of the growing leak. “As the data came in we shared those concentrations with” the LDEQ, says environmental manager Reese, noting that his calculations kept changing as workers collected the naphtha and tested the air. “We want to be open and honest.”

The Trouble in Shreveport

Upstate in Shreveport, residents have for years complained of the Calumet Specialty Products oil refinery's upsets, which have shattered windows and shaken foundations. Regulators wouldn't necessarily know about the drama from company reports. The refinery has filed just 83 incident reports with the LDEQ from 2005 to mid-2011, among the lowest numbers in the state, the Bucket Brigade's data shows.

Tired of the pervasive "rotten-egg" stench, residents have kept event logs and taken samples with specially equipped buckets, exposing unsafe levels of hydrogen sulfide. The gas causes headaches, eye irritations and sore throats. "It's a battle every day," confides Velma White, of the Residents for Air Neutralization, "and I'm tired."

In August 2011, after a push by RAN and the Bucket Brigade, EPA inspected the refinery, uncovering a series of plant failures. The agency also found a litany of reporting problems. Calumet managers notified the EPA of six incidents in five years, yet their internal files documented nearly 600 — 100 times as many — a 2011 EPA document shows. Inspectors audited 161 records, finding most lacked the basic required information. Some offered no details.

Calumet's plant manager, Tom Germany, didn't respond to emails and calls seeking comment, and neither did other facility representatives.

According to the EPA's inspection report, Germany told regulators that "he knows what good looks like and recognizes that Calumet is not there yet."

In the ensuing 18 months, Calumet managers have filed 19 reports of "unauthorized discharges" with the state, nearly one a month. "You'd have thought they'd be more cautious" since the EPA visit, says RAN's White. "But they're still piling it on us."

Sometimes, the government stick is more tepid than expected. More than a year and a half after the EPA's damning report in Shreveport, regulators have yet to issue violations. Advocate White says she met with EPA officials and Calumet supervisors as part of negotiations in a civil enforcement action — relaying community demands for anti-pollution projects including a medical mobile unit.

While EPA officials told her to expect a "large" fine, she says past settlements with Calumet, including a \$1 million fine levied by state regulators in 2010, have meant little in real terms.

"It didn't solve the problem," White says. "You send DEQ and EPA to Calumet, and they come out with roses."

Some former regulators view such fines as "ineffective." As TCEQ commissioner, Soward tried to change the way the agency determines financial penalties, to no avail. Today, he says, upset events aren't treated "any differently than a common violation," rendering fines so paltry companies have no incentive to stop.

Citizen suits, whistleblowers expose truths

The citizen suits in Texas may reveal deeper truths than regulators have found. In 2008, environmental groups sued Shell over recurring emissions at its Deer Park facility, which ranked among the state's top 20 upset emitters at the time. By 2010, Shell had settled the case, agreeing to pay a \$5.8 million penalty for its violations, a record in any Texas citizen suit, and to annually reduce the plant's upsets in volume and number. Since then, Shell has cut upset emissions by 35 percent, court records show.

"That proves it right there," says Karla Lande, who lives across a river from Shell Deer Park, and attributes her lost sense of smell partly to its upsets. When companies are forced to ease upsets, she adds, "They're able to do it."

In Baton Rouge, it took an ExxonMobil worker to shine a light.

The first day of the valve leak, Bucket Brigade advocate Anna Hrybyk remembers giving two EPA officials a "toxic tour" of Standard Heights and noticing a "rancid smell." She got a headache; the officials, she recalls, "were like, 'Quick, get in the car, roll up the windows.'" On June 15, Hrybyk asked regulators about the incident, and received an email assuring her the initial "estimated quantity was 10 lbs."

The next day, a whistleblower worker tipped off Hrybyk to a different scenario.

More than 48 hours into the incident, company records show, refinery employees

were still collecting naphtha from the sewer, trying to suppress benzene vapors. Hrybyk dialed the state's hotline, setting off a series of regulatory activities that would end in the LDEQ's enforcement order. The July 2012 notice of violation says Exxon, among other things, was "emitting pollutants not authorized by a permit." The action, pending the company's legal challenge, could result in penalties.

Critics believe regulators never would have brought down the hammer without outside pressure. Nolan, the LDEQ enforcement chief, acknowledges that agency officials "didn't act until we got a complaint," but stresses that the enforcement order proves "we do act when a company has unauthorized releases."

For residents, it all seems like more of the same. In the aftermath of the leak, Bowman displayed posters in her yard declaring, "ENOUGH IS ENOUGH," helped form the Standard Heights Community Association, and traveled to the nation's capital to lobby.

As the months have passed, feelings of helplessness have surfaced. She has noticed other pungent odors pervading her neighborhood. The Bucket Brigade's latest data show 13 incidents at Exxon's Baton Rouge complex since last June's release, emitting more than 62,000 pounds of hydrochloric acid in one upset last November alone.

Source: <http://www.publicherald.org/archives/17705/investigative-reports/energy-investigations/fracking-energy-investigations/>