

# Ohio's Lack of Regulation of Hydrogen Sulfide- Risk Assessment

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"The Texas Commission on Environmental Quality limits H<sub>2</sub>S emissions in residential and commercial areas to 0.08 parts per million (ppm) to protect the public. At 100 ppm of H<sub>2</sub>S, one breath will kill a person instantly. Even much less concentrations will cause severe sickness." Texas A&M Engineer, C. Morgan for POGCO

## **Death came from a cloud / A silent killer took 9 lives in 1975. Could it happen again?**

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SUN 11/09/1997 The Houston Chronicle, Section Special, Page 2, 2 STAR Edition

DENVER CITY - Faye Bernard has preserved the note, scribbled in the looping cursive of a teen-age girl.

"Moma [sic]: I'm gonna spend the night with Dee Dee," it reads. "Love, Clara." This brief and, as it turned out, heartbreaking missive was written on Saturday, Feb. 1, 1975, by 14-year-old Clara Peevy. She was letting her mother, Faye, know that she'd be staying with a friend, Dee Dee Patton, at the Patton home.

The girls, whose budding social lives revolved around the Assembly of God church, were in high spirits. There had been a revival in the West Texas town all week, and 17-year-old Dee Dee had sung If That Isn't Love on Saturday evening.

"It sounded so pretty," Bernard, 72, said recently. "It was about the prettiest she'd ever sung."

By 5:15 a.m. Sunday, Clara Peevy, Dee Dee Patton, her parents and four relatives who had spent the night with them were dead, victims of hydrogen sulfide that leaked from Arco's Willard Unit Well No. 66, about 200 feet behind the house.

A neighbor, Tom Merrill, had called to warn them that a chemical cloud had sickened his wife and might be moving their way. Still groggy in the darkness, they had suffocated seconds after rushing outside on a chilly, damp and nearly windless morning. Five bodies - including Clara's - were found in a car, two in a pickup truck and one on the ground.

A ninth victim - 19-year-old Arco employee Steve Sparger, who was responding to the leak - was found in his pickup. The position of the truck in a ditch along County Road 330 suggested that Sparger had driven into the cloud and was trying to turn around when he died.

Almost 23 years after Texas' worst hydrogen sulfide accident, all that remains of the Patton house is a cracked concrete slab. There is no memorial, no indication of any sort that lives were lost on this spot three miles north of Denver City, although the "Christmas tree" structure of Well No. 66 remains.

Fleta Taylor, 70, lives about a mile from the well, as she did in 1975. She and her husband, Ben, were spared the effects of the gas, although he died of a heart attack three weeks later.

Taylor said that the Patton family seemed oblivious - as did most other people - to the sour gas wells (those containing at least 100 parts per million of hydrogen sulfide) that had been drilled all over Yoakum County.

Merrill, who barely got his wife and two children out of their home, told Taylor after the accident that "he could hear the Pattons crying out. Of course, they didn't last long." Melvin Reed, 65, was one of the volunteer firefighters on the scene. "I can still see it like it was yesterday," he said.

A crowd of onlookers - among them several timid rescue workers - had formed by the time the firefighters arrived at about 5:30 a.m., Reed said. The gas cloud was nearly stationary, rolling ever so slightly to the south.

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Moving in from the north, Reed and fellow firefighter Gaylon Bruton went first to the home of Ed and Verna Bagwell, who were inside, asleep, with their three children. "We woke them up," Reed said. "If we hadn't got to them when we did, we'd have lost five more."

Pressing south, Reed and Bruton met three Arco employees at the hissing well. Arco's Don Land closed the valve, burning his hands in the process. Each of the men was wearing a self-contained breathing apparatus, although Reed removed his mask moments later to appraise the gas level.

"Everybody told me, more or less, how damned stupid I was, and I guess they were right," said Reed, who avoided injury.

He and Bruton approached the Patton house from the west; Reed was the first to go inside, finding a dead poodle under one of the beds but no people.

"I got to hunting," Reed said. "I went over to the east side and that's when I saw people scattered all over out there."

J.C. Patton was lying on the ground near the pickup, "like someone had poled him with a baseball bat." Patton's wife, Glenda, was slumped over the wheel of the car, its engine still running and its headlights on.

When it was all over, Reed openly expressed his disgust with the skittish rescue workers, the reporters and photographers who had turned the tragedy into a "freak show" and the oil companies, which, he believed, had misled the people of Denver City about the dangers of subterranean hydrogen sulfide.

Not surprisingly, Reed - a welder who did contract work for Shell Oil - became something of a pariah in a town of 5,000 whose economy was almost wholly dependent on oil and gas.

"People treated me about like a bastard child at a family reunion," he said. "If this happens again, I'm gonna be one of them damned spectators." Clinton Bowman, editor of the biweekly Denver City Press, remembers Feb. 2, 1975, as being drizzly and cold, "one of those mornings when the clouds were really low. It was like you were in the clouds."

Conditions were ideal for the accumulation of hydrogen sulfide, which is heavier than air and, in the absence of atmospheric circulation, seeps into low spots. All that was needed was a source.

It came in the form of a leak from Well No. 66 that, according to a meter at the nearby El Paso Natural Gas plant, began at 2:16 a.m.

The leak was caused by the failure of a stainless steel casting - called a wash nipple - that had been installed only five days earlier. Investigators later determined that it was unsuitable for use on a well containing upward of 40,000 ppm of corrosive hydrogen sulfide.

"Company does not know how this nipple got into the operation," concludes a Feb. 21, 1975, report by the Texas Railroad Commission, which regulates the state's oil and gas wells and pipelines.

The gas vented for about five hours. Volunteer firefighters and the Arco employees who shut off the well and carried out evacuations were credited with preventing more deaths. Merrill, who worked for Shell, was praised for promptly warning the Pattons and calling Sparger in the Arco office.

Had he been equipped with a respirator, the youthful, athletic Sparger might have survived and saved at least some of the eight people in the Patton home.

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"Steve Sparger was one of our big football players," said Bowman, who was teaching 11th-grade history at Denver City High School in 1975. "He was the starting fullback. He was a big, nice, likable young man."

Sparger graduated in May 1973 and, as was typical in Denver City, went straight to the oil fields. He was hired as a "computer observer" by Arco and had been married only 15 months when he died.

The two investigating agencies came down hard on Arco. The Occupational Safety and Health Administration cited the company for, among other things, failing to provide Sparger with respiratory protection and adequate training.

The Railroad Commission found that Arco's safety equipment at the well was not sensitive to small leaks and that the company had no written emergency plan. A black-and-white photograph in the Feb. 6, 1975, edition of the Denver City Press shows the upshot of these lapses: A living room left in disarray by the Pattons and their house guests.

Two pairs of eyeglasses lie on a table in the foreground. In the background are a recliner - in its horizontal position, as if someone had been sleeping on it - and a cot covered with rumpled sheets.

By the winter of 1975, oil field workers had known for decades about "rotten-egg" gas, how it could smother you in a few breaths if the concentration was high enough, how it could make you do crazy things - things a raging drunk might do - if it didn't kill you. To the public, however, hydrogen sulfide had seemed to pose no real threat until the "white hell" (as the Press depicted the cloud) claimed nine lives in the little town just east of the New Mexico line.

It was national news, an oddity amid a numbing succession of car wrecks, plane crashes and similarly mundane disasters. The Lubbock Avalanche-Journal, the biggest daily newspaper in the area, covered the story with particular vigor, to the great irritation of Press publisher Gene Snyder.

"They had a front-page story every day for a month after it happened," said Snyder, 68, who still runs the paper. "They kept it alive, and we were trying to forget."

The story's prominence served at least one purpose: it forced the Railroad Commission to re-examine and ultimately tighten its Rule 36, which deals with the handling of hydrogen sulfide.

Drillers and producers of sour gas wells were ordered to calculate worst-case releases, plan for emergencies and warn the public. Special conditions were placed on enhanced-recovery wells, like Arco's No. 66, into which waste gas is reinjected to force out hard-to-capture oil.

"Twenty-two years ago, you didn't see no signs around saying 'Poison gas,'" said Faye Bernard's husband, Roy, whom she married after her first husband, Burl Peavy, died in 1989.

Today, Denver City is teeming with such signs, some of which can be found on the lawns of nice homes in the center of town. The signs are so plentiful, in fact, that it's easy to see how one might come to ignore them, to grow complacent about the naturally occurring chemical that contaminates oil and gas in the Wasson Field.

"This whole county, they don't want to talk about this stuff," Melvin Reed said. In a 1993 report to Congress, the U.S. Environmental Protection Agency identified 14 "major H<sub>2</sub>S-prone areas" in 20 states. Four of these areas are in Texas.

From 1975 through 1996, 208 hydrogen sulfide incidents - significant releases from wells or pipelines that caused, or could have caused, death or injury - were reported to the Texas Railroad Commission.

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On July 27, a sour well blew out southwest of San Antonio, near Pearsall. Workers on the drilling rig escaped injury, but the well burned wildly for eight days before it was capped, and hydrogen sulfide levels reached 71 ppm, enough to cause severe lung, eye and gastrointestinal maladies.

Had the blowout been mismanaged, or had it occurred in a less remote area, the outcome might have been different.

Could the Denver City tragedy be repeated? Railroad Commission Chairman Charles Matthews considers it unlikely.

"We have not had a single member of the general public killed (by hydrogen sulfide) since 1975," Matthews said. "That's a very good record."

This statistic gives little comfort to those who live near the Smackover and Pinnacle Reef natural gas formations in East Texas. Some Smackover wells have hydrogen sulfide concentrations in excess of 800,000 ppm - 20 times that of Well No. 66.

The vast, deep reserves of gas in the Smackover and the Pinnacle Reef have attracted a host of exploration and production companies, some based as far away as Canada. Their wells and pipelines are going in near homes, schools and businesses, and some anxious people have organized in opposition.

They fear a recurrence of Denver City - or worse - and sense that the Railroad Commission is not taking the threat as seriously as it should.

Malakoff, a Henderson County town of 2,000, is in the thick of the Smackover play. It is also on the south side of Cedar Creek Lake, a popular retirement and recreation spot that draws crowds in the summer.

Malakoff City Administrator Jeff Looney is uneasy with the combination of sour gas production, retirees and weekend visitors.

A well blowout or a pipeline rupture on a Saturday in July could cause "mass hysteria," Looney said. "If people hear a siren, they're not going to know what's happening. We do not have the law-enforcement manpower to handle that kind of thing."

Bruce Shores regards the activity in East Texas from a unique perspective. As principal of Malakoff Middle School, he worries about the evacuation of children in the event of a release.

As a native of Denver City, he has seen what can happen when something goes wrong. "I know the devastation that community felt," Shores said at a March 25 Railroad Commission hearing about a sour gas well near Malakoff. "I don't know if they have yet recovered."

Outwardly, at least, the town has moved on. The Press writes about the football exploits of the Denver City High Mustangs and the occasional act of vandalism. There are more wells pumping near Fleta Taylor's place today than there were when No. 66 sprang its infamous leak in 1975.

In her own subtle way, Faye Bernard has memorialized the events of that dank February morning almost 23 years ago. In addition to her daughter's last note and assorted newspaper clippings, she has kept a program distributed at the revival the night before the accident.

On one page is an aerial photograph of an unidentified town. Floating above the town are several white puffs, one of which is imprinted with an inspirational message: "He shall come in a cloud."

Religious woman that she is, Bernard prefers not to dwell on the irony.

