



*View from the top of the West Clinton dredge site overlooking Galena Park. - photo by Celeste Ponce, AIA*

# Breathing Lessons

Residents of Galena Park mobilize to fight chemical air pollution.

Celeste Ponce, AIA

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On a late November morning I met with Juan Flores, a lifelong resident of the Houston suburb Galena Park. Flores is also the community air monitoring program manager for Air Alliance Houston, a nonprofit that works with local communities to advance environmental justice. Together, he and I toured the city, visiting key sites along the way. The storefront window of the paletaria (frozen popsicle shop) La Monarca Michoacana displayed large images of manguitas — frozen natural mango mixed with chamoy, lime, and powdered chile — as it reflected the idling semi rigs along the street. Clinton Drive's diesel emissions from the north coupled with emissions from the large clusters of refineries and petrochemical plants to the south means that chemical air pollution is a real problem for neighborhood residents — nearly half of Galena Park's 10,000 residents live within one mile of an industrial plant.



*"No Trespassing or Dumping" warning sign posted at the West Clinton dredge site. It is located across the street from the Galena Park Sports Complex and the adjoining walking trails that follow the western edge of the East Clinton dredge site. – photo by Celeste Ponce, AIA*

We headed north along North Main Street toward the Galena Park Sports Complex to visit the little league field. As we approached, Flores described a 2010 makeover of the field completed by organizers from chemical manufacturer LyondellBassell's soon-to-be-closed Houston refinery. The well-maintained field is north of the railroad tracks, bordered by an approximately 20-foot-tall grassy embankment that is used by the Port of Houston and U.S. Army Corps of Engineers to dispose of the ship channel's contaminated dredging spoil. According to an article in *Oil and Gas Watch*, the dredge sites in the area have already been used to discard millions of tons of contaminated sediment. However, new plans are in place to deposit another million cubic yards of dredge material as part of Project 11. This \$1 billion expansion program, launched in 2022, is a partnership between the Port of Houston Authority and members of the Greater Houston Port Bureau to widen and deepen 39 miles of the ship channel to accommodate large cargo ships and tankers.

As we walked the grounds of the little league field, Flores describes his childhood playing in the open field dredge sites. When I was a kid, we used to ride our bikes in the middle of this thing," he says. "Although it was sand from the port, we would call it quicksand. We would take turns sinking into the "quicksand" and pull each other back out. We would also find rainbow color water near my house and splash in it. Today, I ask myself what I was thinking playing in oil, but I didn't know; I was a kid."

Today, Flores and his daughter ride bikes on trails that run parallel to two of the waste sites; she developed a tumor above her kidney before she was born. The pollution remains a big concern for his family's health. I asked him why he stays, and he replied: "I grew up here. I lived in Magnolia Park and my family moved to Galena Park when I was four. I have lived here ever since. I was raised here. This is where I am from. My siblings left because they wanted to get out of Galena Park. I want to stay here. I could leave, but instead I want to fight and stand for our community. Why should we have to leave?"

Flores was recently diagnosed with monoclonal gammopathy of undetermined significance (MGUS), a precancerous condition and the most common plasma cell disorder. According to the American Cancer Society, MGUS can develop into multiple myeloma, a cancer that is linked to high levels of benzene exposure.

Flores recalls waking up one time as a child and seeing white ash everywhere. He says: "I thought it was snow, so I ran outside and started playing with it. My mom said to me, 'This cannot be good because it is the summer, and it is not snow.'... I am fighting the fight, but my health is changing. It is likely due to all the stuff I have been breathing."

Originally sustained by an agriculture and livestock economy, Galena Park transitioned into a railroad center by the 1880s. The city attracted ship channel workers during the late 1910s, and these were followed by the petrochemical plant workers.

Today, over 80 percent of Galena Park's population is Hispanic. According to the 2017-2021 U.S. Census, nearly 30 percent of the population lives in poverty and faces significant health and environmental challenges from the toxic air released from the high-risk industrial plants surrounding the community. Those living near the industrial plants are at greater risk for life-threatening chemical accidents, respiratory problems, chronic illness, and premature births. According to a 2021 Texas Environmental Justice Advocacy Services and Natural Resources Defense Council study, pollution exposure includes fine particulate matter, coarse particulate matter, and volatile organic compounds (VOCs). Exposure to the air pollutants produces "negative health effects" including damage to the heart and lungs, cardiovascular disease, and premature death. VOCs are also associated with other morbidities including cancer.

Eager for change, local advocacy groups and community leaders are taking the initiative to gather data to present to decisionmakers by installing Apis and PurpleAir brand air monitors to capture particulate matter and smoke on



*Flores in front of the Apis and PurpleAir monitors installed at the Natural Health Care Massage's light posts along Clinton Drive. – photo by Celeste Ponce, AIA*





*Juan Flores stands in front of his home, which is located on the northwest side of Galena Park. – photo by Celeste Ponce, AIA*

residents' homes or businesses. They are tracking the data online. The DIY networks of concerned residents, municipalities, and environmental advocates identify local air pollution sources in real time, and the monitor network mappings disclose challenges pollution poses for the health and well-being of Galena Park. Flores explains why he feels compelled to lead the cause: "We know they are not going to shut down and leave. They have more money to outlast all of us. We are working on trying to monitor the air so we can try to get the companies to cut back on their emissions so that we can make it safer for the community as best as we can."

The following series of interviews presents an overview of the grassroots air monitoring efforts by Galena Park residents. The photographic journal and interviews tell the story of their work to collect data from the air monitor networks and their struggle to remain in their neighborhood. The interviews have been edited for clarity and length.

*As the manager of the air monitoring program for Air Alliance Houston, Juan Flores works with residents from Galena Park and the surrounding community installing monitors and speaking out on issues regarding environmental justice and air pollution.*

Celeste Ponce, AIA: What do you like about living in Galena Park?

Juan Flores: My father worked at the Chevron refinery, and my mother still lives in the home I grew up in. It's my home. When stuff happens, my neighbors call me. They see me going out there and speaking about it. The people that live here mean a lot to me.

The trailers on the right [driving through the intersection of Clinton Drive and Clinton Park Street] are TCEQ (Texas Commission on Environmental Quality) monitors. This is the closest station we have to us. It's not even in Galena Park. It is owned by the city of Houston. It is beyond where we live, and due to the wind patterns, what it captures does not really relate to Galena Park. That is why it is important to have a new air monitor network that is working for us. We don't want to rely on this station that is two miles from us. The purpose of this location is because it is downwind from Valero, and [the] Manchester [neighborhood] is nearby.

CP: How did you choose the location of the Apis [brand] air monitors?

JF: The purpose is to create an air monitoring network that would encompass a larger area. We don't just want to position one here and one there. We want to cover more ground. Ideally, we want to put them around parks and schools.

CP: What makes Apis monitors more expensive?





*View of downtown Houston from the West Clinton dredge site. – photo by Celeste Ponce, AIA*

JF: Apis monitors cover NO<sub>2</sub>, VOCs, ozone, and particulate matter as well. They do more.

We just received another grant to increase our air monitoring capacity. I am getting ready to buy \$4,000 monitors. We are also purchasing Flow, a small air quality tracker, with this grant. We are getting ready to upgrade our capacity with air monitoring in Galena Park. By expanding, we hope to cover more area. The Apis monitors we are using now are leased. There is an \$11,000 upfront cost for its use, and then every year after that we pay a \$3,000 maintenance fee. We can also add canisters to the Apis monitors that can collect samples during major spills or when the monitor picks up spikes in the air quality. The technology allows the canister to suck in an air sample that then can be sent to a lab for testing. PurpleAir monitors are \$250 and are considered the most attainable right now.

Our goal is to place the Flow monitors on kids' backpacks so we can all understand what air kids are breathing to and from school.

CP: What is your greatest challenge with covering more area?

JF: Finding people who are willing to host the monitors — people who are willing to let us use their Wi-Fi and electricity to make it happen. Some people are afraid that it is going to steal personal information or personal files on their computer and share it on the web. I spend significant time trying to explain that is not what it does. Education is the key, so people have access to the correct information. The concept of an air monitor is new to most people. It looks weird. It looks like a coffee mug.

This is a dredge site called Project 11. It's between us and Jacinto City. This is where they dump the sand that they dig up from the Port of Houston. Our baseball fields are next to the dredge site as well. We used to have a really good view of downtown, but it is gone because the dredge site keeps getting higher and higher.

CP: Do you think many who live in Galena Park fully understand what the choices are, or do you think there is a vulnerability for non-native English speakers in these areas who may not fully comprehend the health impacts due to language barriers?

JF: Well, Anglo-American families in many cases have been here longer than we have, and they are still dealing with all the issues and challenges we are facing. With that said, my dad ingrained in me never to work at a refinery. I have uncles and cousins who work at the refineries and see first-hand what is truly going on. They all say stay away from this. Do not do what we do.

I have a friend who works in Galena Park at a refinery, and he tells me stories about how they dump chemicals in the ship channel at night when no one is looking. He will never testify against it because he is afraid of losing his job. He tells me what it's like to work there off the record.

CP: Does the community feel safer knowing that the air is being monitored in real time?



*The embankment of the East Clinton dredge site seen just beyond the little league fields of the Galena Park Sports Complex. – photos by Celeste Ponce, AIA*





*Cruz Hinojosa stands in front of his home on the northeast side of Galena Park. – photo by Celeste Ponce, AIA*

JF: It is hard to say. We won't know for sure until we reach more people. Environmental Community Advocates of Galena Park and Air Alliance Houston just completed two ad campaigns. The commercials are in Spanish and English. Once it launches, we will start advertising it to everybody. I bought my house five years ago because it was the farthest away from the ship channel that I could find. About a year ago, when the LyondellBasell incident (a leak at their facility that created a toxic smell lasting for several days) happened, it smelled so bad that I swear it felt as though the incident happened in my backyard. My wife came out for about a minute, and she couldn't take it. It was bad but the refineries were saying it is not lethal, it's not bad — it's just a nuisance. But you walked outside, and it would make you nauseous. I was far away from the company, but I felt like it is happening in my own backyard. That's how strong it was.

CP: Oh wow. Am I smelling sulfur right now?

JF: Oh yeah. If it is a rotten egg smell, it is sulfur — big time. That is Valero right there. All the emissions are coming from that direction.

When we were doing the benzene studies, all the highest reads were from this area. The apartment complexes here on the right are often hit hard with all the toxic air.

*Cruz Hinojosa was previously a senior inspector at the Houston Police Department and purchased a co-worker's Galena Park childhood home in 1998. Hinojosa is a Texas Southern University graduate and president of the Environmental Community Advocates of Galena Park. He regularly teaches ESL classes at the Galena Park Branch Library.*

Celeste Ponce: How often do you monitor the air?

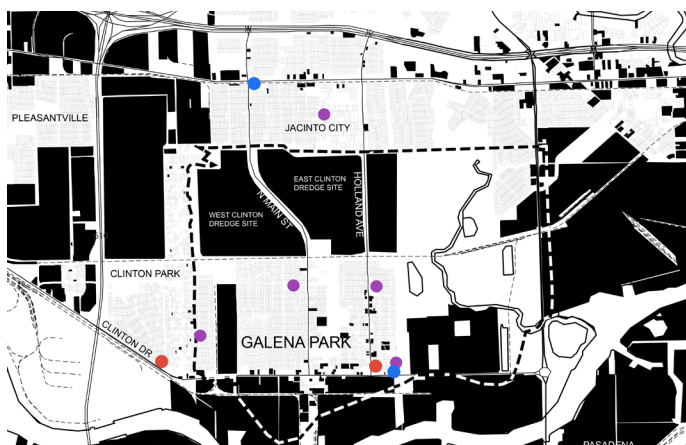
Cruz Hinojosa: Not often enough. We went to an air monitor conference recently. I was telling the people, I have an air monitor attached to my front porch, and I see it every day, but you forget about it. I would like to see something that alerts me on my phone when numbers are increasing into hazardous zones. Everyone in my area would receive the same message, and we can communicate with one another about the dangerous impacts the air quality may have on our health.

Last night the monitor peaked at 11:30 p.m. The reading was at 102 [micrograms per cubic meter]. It is typical for the refineries to release the worst air pollution at night while people are asleep. Today the PurpleAir monitor reading is normal at 27 [micrograms per cubic meter]. Once I know this information, I don't know how to communicate it to the rest of the neighborhood. We are trying to set up a community wide alert or a universal website.





PurpleAir monitor installed alongside Flores' front porch. – photo by Celeste Ponce, AIA



Site map highlighting the industrial parks (shown in black) and the air monitoring networks. – image by Celeste Ponce, AIA

CP: What are the biggest challenges the community faces regarding the monitors? Why do you think the whole neighborhood is not installing monitors at their homes?

CH: Well if there is an environmental issue and it makes the news, people will be up in arms for about two weeks. After that, you don't hear from them. Their concerns are centered around making sure kids are in school, trash is being picked up, and during emergencies they resort to 911. It's education. About 40 percent of workers in the city are undocumented. Their daily worries are maintaining a job and not getting deported or reported to ICE. That is the major issue in their everyday lives.

CP: How do you hope to get the word out about the monitors?

CH: We hope to connect through food. Galena Park is a dry city (no alcohol sales), so there are no major grocery stores in Galena Park. We have convenience stores and Middleton Super Market. It's been here a very long time but doesn't have a variety of choices. It is basically impossible to purchase fresh produce in Galena Park.

CP: Why do you think people stay in Galena Park?

CH: There's not a single answer, but we have good schools and low crime. It has a smalltown feel while being near downtown. We don't hear of any shootings. We did hear of some criminal activity recently in Galena Manor, but the issue we have now is that the police force is very undermanned. We have had six to seven police chiefs in the last six years.

CP: What is your hope for the future of Galena Park?

CH: Safeguarding the future of our kids. We are doing it for the kids because for us, it's too late.

CP: Do you think the population will start to decline in Galena Park?

CH: If we don't start building the community and investing in the kids, Galena Park will become a port. What I mean by that is Galena Park will become a container city because the port needs container space.

CP: What motivates you to keep going?

CH: I live here. I want to try to do whatever I can do in the time I have left to do it.

*Air Alliance Houston (AAH) was originally named the Galveston-Houston Association for Smog Prevention (GHASP). It was started in 1992 as a small grassroots initiative to prevent and eliminate smog in the Houston area. More than 30 years later, the organization continues to advocate through research and education for the public's right to breathe clean air. The following interview was conducted with three AAH staff members: Community Air Monitoring Program Manager Juan Flores, Research and Policy Coordinator Anthony D'Souza, and Communications Coordinator Cassandra Casados-Klein.*

Celeste Ponce: Do most communities reach out to you with a plan in place?

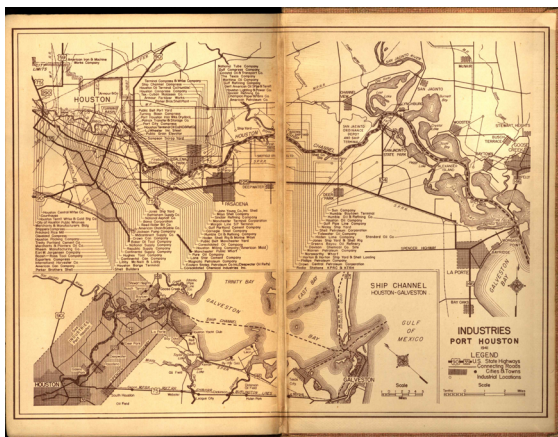
Juan Flores: The community typically generates some sort of interest prior to reaching out to us. We then meet with the community leaders. After understanding their goals, we set up a mapping session. We invite all the community to come out. The community coordinates the meeting, and we set up a large map for everyone to participate in marking up what they consider the problem areas.

CP: You would think that finding a willing member of the community to host the monitor would not be a problem.

JF: It is a problem. The monitor needs power and Wi-Fi. If the resident does not have access to an outdoor outlet nor the internet, then we are unable to make it work. The other problem is people's doubt as to whether their privacy is truly secured. I have residents say, well if it's connected to my Wi-Fi, does that mean they can track me or have access to my personal files and information?

CP: Once a family sees the purple-colored warning on the PurpleAir monitor map online, is their only form of defense to stay home and turn off the AC?





*Historical map depicting industries in Port Houston. Federal Writers' Project. 1942. Houston – A Complete History (American Guide Series). Anson Jones Press. – image via Federal Writers' Project*

JF: It depends on what the situation is. The ozone is what it is. You can't get away from it unless you are inside your house. Chemical spills are different. Galena Park, Pasadena, and Manchester are fenceline communities. They are right next to the refineries and fall into the lockdown category. Since I was a kid, we would smell the chemicals in the middle of the night. But by the time the county comes out two days later, the smell is gone. You can't prove it. Our goal is to build scientific data to monitor the air quality trends and see if we can pinpoint where the pollution is coming from. It takes hard scientific data to build a case. Unfortunately, the data we collect is not admissible in court — at least for now. All we can do is collect the data and share it with the county, city, and TCEQ and demand that they use the data to collect the information they need to do something about it.

CP: Can you describe the evaluation process once the data is collected? Do you create data charts?

Anthony D'Souza: Yes, we do that every three to four months. We then coordinate an outreach or "action time" session to present the data. We present the data, and there's a brainstorming session to coordinate the action or steps they want to take. We consider regulatory action. We also work with their policymakers. We are preparing for a meeting in Galena Park, and the data we are collecting does not look healthy. The numbers are consistently high.

Cassandra Casados-Klein: In these meetings, you see how they can go after the community members. They would say, well, you didn't see what you are claiming you saw because we have the statement, and it does not make sense.

CP: It sounds like the industries' representatives resort to intimidation techniques to clear themselves from any wrongdoing.

JF: There was a teacher at the meeting who said her kids were playing baseball in the shadows of all the refineries. She can see the flare and the smoke while wondering if she should continue

to allow her kids to play baseball.

CCK: The industry representatives responded by telling her that she can go online and review it in the database within 24 hours. She asked, "But how does that help me now?"

CP: As an organization do you ever strategize about the network mapping?

JF: I am going by wind patterns now. In Houston, 80 percent of the time, the wind patterns are coming off the Gulf of Mexico, or southeast winds. We can put an air monitor on the southern part where the residents consider the source of the problem to be, but the winds only flow from the north for a couple of days in the fall. Then, the wind pattern goes right back from the southeast.

TCEQ monitors are so spread out that there are neighborhoods that don't have any monitors collecting data. That is why it is important that communities like Pasadena and Galena Park obtain their own monitors.



*View standing north of the Houston Ship Channel along Mayo Shell Road. – photo by Celeste Ponce, AIA*



*View of Texmark Chemicals and Kinder Morgan storage tanks along the southeast corner of Clinton Drive. – photo by Celeste Ponce, AIA*



CP: What would you like to see happen once the changes are implemented?

JC: At the very least, we want TCEQ to enforce the rules that are already in place. What they resort to now is they fine a company that violates a rule, but 70 percent of the time they fail to collect the fine. We have documentation that shows that TCEQ never collects the fine. There are countless examples where the communities that suffer the most do not get a direct benefit from the fines. It's not fair that the allocated funds are not directly benefiting Pasadena and Galena Park.

CP: How would 90 percent air monitor coverage help your cause? Would greater coverage result in a significant shift in the data?

AD: Number one, it will inherently give more integrity to the data we have already collected. Also, with any air monitoring it is difficult to point to the exact location of the source. With a field of air monitors, you can get a little closer to pinpointing the source as opposed to capturing data only from the four corners of the neighborhood, and there is strength with numbers.