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FEATURED

Why is pollution in east South City so bad?

As residents deal with respiratory ailments, they're also trying to understand why air quality is poor

By Alyse DiNapoli, Daily Journal staff
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In South San Francisco's Old Town neighborhood, families make frequent conversation with each other at school events and parks, musing about their kids' grades, sports, friendships and other trials and tribulations all too familiar to parents of young kids.

Except parental chatter in the area has become increasingly tinged with stories about health ailments, specifically their kids' respiratory conditions like severe allergies and asthma.

"When we get together, everyone is talking about their kids' allergies, at school and or at the park," Nora, an Old Town resident for more than 20 years who did not want to give her last name, said in Spanish.

Nora has two sons, one with allergies and the other with asthma, and over the years, her own allergies have been getting worse.

"I haven't always had allergies. It's been more in the last 10 years," she said. "I've been talking to the community more and they all say that the air quality is bad, and I'll ask if they want solutions and what they're interested in seeing, because a lot of our kids are getting worse with allergies and asthma."

Studies have long shown that poor air quality and particle pollution is strongly associated with respiratory conditions, such as asthma, and can lead to higher rates of acute symptoms and hospitalizations. In fact, the zip code where Old Town is situated, 94080, has had the highest number of asthma hospitalizations of any other zip code in the county for eight out of the 10 years between 2013-23, according to data from the California Department of Public Health, and it averaged the number four spot across the decade when calculated by hospitalization rate per 100,000 residents.

The neighborhood has a majority Latino population, with a median income that's roughly half that of the county's, and many residents, such as Nora, have only recently started making connections between high pollution levels and their kids' health, especially on account of recent community organizing efforts.

"South San Francisco has some of the worst air quality in the Bay Area, and that was a concern that brought us to start looking deeper at the problem," said Julio Garcia, founder of the environmental health nonprofit Rise South City.

The nonprofit is only a few years old and started off connecting with local community members like Nora, many of whom are monolingual Spanish speakers, and educating others about the correlation between certain health ailments and poor air quality.

"There are community members with neighbors or family members who have asthma and respiratory issues, but there was never a correlation with air quality. So you go to the doctor to treat the asthma but they never educate on where those sources could be coming from," Garcia said. "And the language barrier is also a big factor."

Pollution metrics

The state's Office of Environmental Health Hazard Assessment just released its most recent CalEnviroScreen data, which maps out over a dozen pollution indicator metrics — ranging from particulate matter levels to groundwater threats and air toxics — and environmental health indicators, like asthma and cardiovascular disease, by census tract. According to the data, some census tracts on the eastern side of South San Francisco, particularly those in Old Town, downtown and east of Highway 101, have some of the Bay Area's worst pollution burden scores, an average of the percentiles for all the indicators.

The census tract that comprises the eastern side of Highway 101, which abuts Old Town, is ranked number three in pollution burden out of more than 1,700 census tracts across the entire nine-county Bay Area and is number one in San Mateo County.

At least one of the three census tracts on the eastern side of the city are ranked number one across several other pollution metrics in the county, including clean-up sites — which are high-priority contamination sites — as well as solid waste, small air toxic sites and PM 2.5 — or inhalable particulate matter strongly associated with negative respiratory health and other ailments.

Information gaps and limited data

The city's primary data regarding air pollutant contributors comes from a 2017 emissions inventory as part of its Climate Action Plan, though it's only for greenhouse gases, not necessarily other types of pollutants, and it's likely the figures don't paint a full picture.

The plan cites vehicles as the main GHG contributor, responsible for about 269,000 metric tons of CO2e, or 44% of total annual emissions in the city — an intuitive assumption given the area's proximity to Highway 101. But because many other Highway 101-adjacent census tracts in the county don't have the same level of pollution burden, including PM 2.5 — often associated, at least in part, with vehicle emissions — some residents and advocates are digging into whether other sources are also to blame.

There are also some notable omissions to the inventory, and even by the document's own admission, the CO2e, or CO2 equivalent, amounts emitted by the city's industrial and commercial sector is likely an underestimate.

While it's technically not under the city's purview, there is no mention of the neighborhood's proximity to San Francisco International Airport, despite studies linking airport-related emissions to degraded air quality, which are correlated with numerous health impacts, including lung conditions.

And despite its heavy industrial presence, including the highest number of hazardous waste generators of any city in the county — and specifically the most large-quantity generators, according to the California Environmental Protection Agency and the federal Environmental Protection Agency data — there aren't explicit mentions about if or how that could contribute to local air quality.

The inventory's "nonresidential energy" category — comprising one-third of the city's GHG emissions according to the data, or 194,000 metric tons — was likely an undercount, the plan states. Genentech's South San Francisco facility alone generated an annual average of 84,810 metric tons of CO2e from onsite energy use between 2015-17, according to the company's 2019 Sustainability report. That's higher than the combined emissions from all residential energy use and off-road equipment, like construction, and would comprise almost half of all nonresidential energy use in the city if accurate.

Deputy City Manager Megan Wooley-Ousdahl said the city couldn't parse out each property or facility's energy usage from the 2017 inventory but it hopes to conduct another emissions inventory in the near future.

The effort to better understand the area's poor air quality and health outcomes is also complicated by the fact that while greenhouse gas emissions are some of the most commonly known pollutants — and the impetus for Climate Action plans and stricter regulatory policy from the local to global level — they're not the only type of emissions associated with negative health impacts.

Local tracking and monitoring efforts

About two years ago, Rise South City began securing grants and partnerships to obtain Purple Air and Clarity monitors which measure PM 2.5 levels and can provide a more accurate block-by-block portrayal of air pollution, but barring additional funding and robust equipment, there are still lots of information gaps.

The Purple Air monitors, for instance, require consistently reliable WiFi, which affects data collection when internet connection isn't strong, Garcia said, and both types of monitors have a limited scope in what they can detect.

"When it comes to air toxics, you need much more expensive equipment that only government agencies have, so those agencies need to step in," said Bill Magavern, policy director at Coalition for Clean Air. "The [Purple Air and Clarity monitors] only pick up particulate matter, which is a pollutant of great concern … but if you've got emissions from benzine or various solvents that may be coming out of industries, those monitors [won't work]."

Rise South City also partnered with the University of California, Davis, which recently developed the Toxic-metal Aerosol Real Time Analysis monitor, an instrument that can identify 16 metallic compounds. The device can then be used to trace back to sites or facilities that are emitting any of those at high levels.

"It can help us potentially identify sources of emissions, like who is releasing a lot of iron or manganese. It can also help us downstream with understanding health impacts," said Clare Cannon, associate professor of community and regional development at UC Davis.

The monitors were placed in a few parts of San Bruno and detected seven of the 16 metallic compounds, such as aluminum, iron and manganese — the latter being a hazardous air pollutant, as classified by the EPA. The report listed some potential sources of the detected metals, such as jet fuel combustion, likely from the airport, cement plants or construction dust, though it's hard to know for certain without further investigation.

Cannon said the monitors represent an important step in identifying sources of harmful air pollutants, but there is still a long way to go, especially when hazardous waste effects could be involved.

"We can only identify 16 metallic compounds in their elemental form and with hazardous waste, there are so many other types of matter and gases, and there's the co-mingling of things … so sometimes it feels like we're looking through a keyhole at a much wider problem but at least we now have a keyhole," Cannon said.

The area's hazardous waste generators encompass numerous industries, such as automotive, medical and recycling centers, and many of the largest generators are also life science research and development firms. All of them are subject to strict federal, state and regional regulations and inspections, including the Resource Conservation and Recovery Act, the primary law governing such facilities.

"We do see a fair amount of solvent, or flammable waste, generated from R&D waste. Sometimes you'll also see toxicity in the hazardous wastes that are generated," said Rick Sakow, manager of the hazardous waste and chemicals section at the EPA.

The EPA along with other agencies, such as the Bay Area Air District and most frequently the San Mateo County Environmental Health Department, conduct inspections of the facilities across a number of regulations and procedures, from toxic air emission levels to groundwater

leaks.

“When we do RCRA inspections with a focus on air monitoring, we use toxic vapor analyzers to test for releases of volatile organic compounds from equipment,” Sakow said.

Overcoming challenges among local communities

Identifying the most consequential sources of pollution is one of the biggest challenges when trying to mitigate environmental health risks within impacted communities, said David Herrera, professor of environmental justice at San Francisco State University.

“The challenge from the government side of things is that it becomes hard to figure out where the responsibility lies,” Herrera said. “Cities don't want to compete against industries, so that’s the difficult part of managing a city, and I think it’s across every city. You want to be friendly to business, but you have to find a way to compromise in a way to keep your communities safe.”

But it’s not an impossible balance to strike, he said. West Oakland is one of the Bay Area’s three communities designated as a disadvantaged community via Assembly Bill 617, which in part, identifies neighborhoods throughout the state that are disproportionately impacted by air pollution and helps them develop monitoring and reduction plans.

The area, in close proximity to the Port of Oakland, is still a work in progress, but it’s made significant strides in reducing emissions, Herrera said.

“There was a major restructuring of port operations, so from the business side, all these trucks going in had to find a place to park to get them away from idling. That was a major factor contributing to emissions,” he said. “On the port side, they also revamped their

processes … and they committed to transition all their port vehicles to zero emissions."

The Richmond and San Pablo area is also one of the AB 617 communities — in close proximity to an oil refinery — as well as Bayview/Hunter's Point in San Francisco, which was more recently added. No communities in South City have been selected for inclusion in the program, though on some CalEnviroScreen metrics, including overall pollution burden, the eastern side of South City has comparable scores as some of the AB 617 communities.

City and industry progress

Even though the city relies on the 2017 data in its Climate Action Plan to understand CO2e emissions, it's still been active in improving air quality, Wooley-Ousdahl said. She cited numerous initiatives, including a partnership with Rise South City on a tree planting program focused on Old Town and surrounding industrial areas. The city also has transportation demand management policies, which limit the amount of single-occupancy vehicle trips for new and current developments, as well as a free shuttle program and stronger investments in better pedestrian and bike infrastructure.

"The city takes this very seriously. We have a multi-departmental approach to addressing this topic in Old Town and downtown," she said. "We have very strong transportation demand management policies, which apply to residential projects over a certain number of units … we also have some trip caps that are in the area east of 101 that are embedded in our ordinance."

The city is also in the midst of converting an asphalt lot in Old Town into a park with lots of trees and green space.

"The [Linden Avenue Park] will have new trees and landscaping, so it will provide a green respite and also CO2 mitigation," she said.

According to self-reported emissions data, Genentech has also seen a major drop in its own CO2e emissions over the years, emitting about 87,000 metric tons of CO2 from onsite energy use in 2015 at its South San Francisco facility, which dropped to about 48,000 just a few years later, according to its 2019 sustainability report. The company cited its decisions to procure electricity from low- and zero-carbon sources and onsite solar generation as some of the major drivers of the decline.

In an emailed statement, a Genentech spokesperson said the company is "committed to the health and safety of our employees, the South San Francisco community, and the environment," and has used "advanced containment, filtration, and waste-management technologies specifically designed to mitigate the environmental footprint of life science research." That also includes transitioning to 100% sustainable electricity and working toward a 50% reduction in its global environmental footprint by 2030, the statement added.

According to mandatory reporting data from the California Air Resources Board, Genentech reported that it had emitted about 26,652 metric tons of CO2e in 2023 in South San Francisco.

Over the years, more life science companies have also become more cognizant and have made massive strides in reducing overall emissions, staying ahead of the curve especially compared to other industries, said Scott Weitze, vice president of research and technical standards at My Green Lab, a nonprofit that helps laboratories, including biotech facilities in South City like Genentech, adopt more sustainable practices via green certifications.

"A culture of sustainability is sort of built in," Weitze said. "We're very blessed with having the ideal audience for understanding the importance of environmental sustainability."

South City's unique status

Still, greenhouse gases aren't the only type of emissions or environmental threats that can impact neighboring communities, and stubbornly high pollution levels coupled with ongoing health concerns have left some residents wondering what exactly are the main contributors.

Garcia previously worked on environmental justice initiatives in East Palo Alto and was struck by the relative lack of local nonprofits and initiatives dedicated to the issue in South San Francisco, despite the latter being a larger city with even worse air quality.

"I was always looking at South San Francisco because they were never represented in anything I knew of," Garcia said.

When it comes to securing grant funding, agencies often look at the median income by census tract or city, which can also be misleading, he added, given the income from an average household living in a nearby downtown apartment is often wildly different from someone living in a nearby Old Town home.

"We have a lot of people who work in tech companies and biotech who make $500,000 in downtown and the next block, you have some of the Old Town apartment buildings, where people make $40,000 to $60,000 a year," Garcia said. "There's income inequality there, so most of the time, when you look at South San Francisco and funding, you need to dig deeper into the community — otherwise we don't get funding."

The block-by-block disparities can also go beyond income and include widely varying pollution levels, Herrera said, citing a 2021 study from University of California, Berkeley showing how air pollution levels can be vastly different not just from one city to another —

or even one census tract to another — but also from block to block. Garcia added that many of the newer apartment buildings along Highway 101 also have filters and cleaner infrastructure compared to the older buildings in Old Town.

“We know that air quality is bad, but it’s too early to pinpoint the sources,” Garcia said. “We just don’t know where a lot of this is coming from.”

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