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ANTHRO 25A: Environmental Injustice

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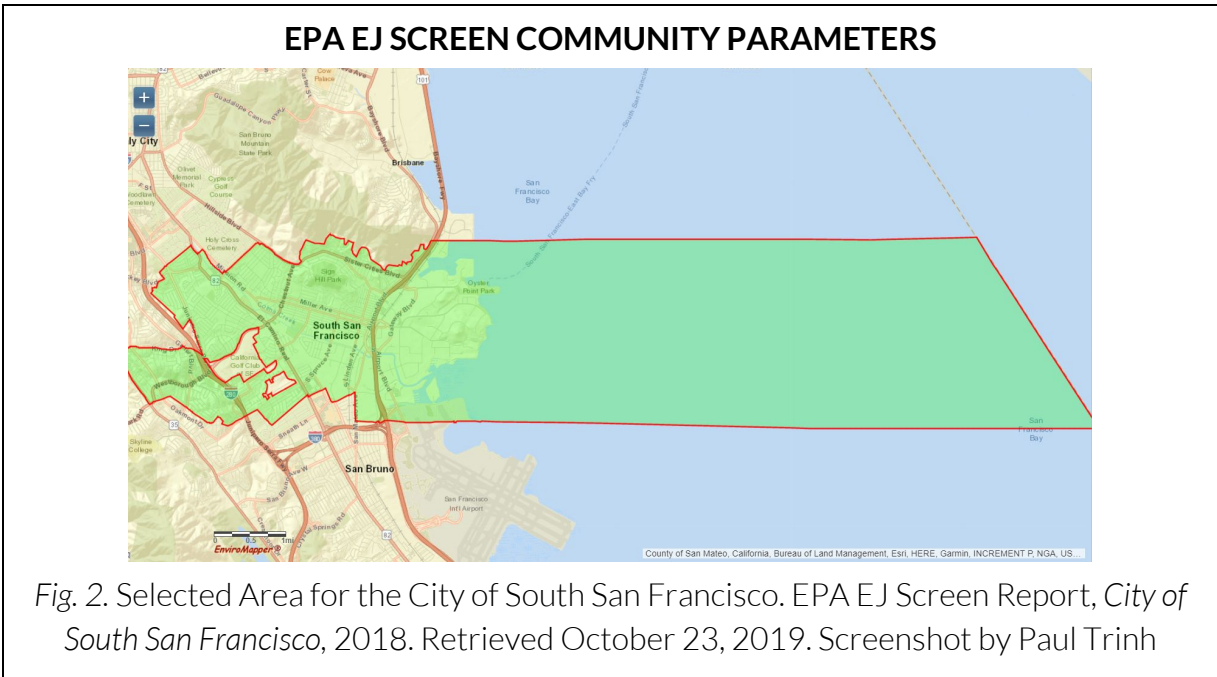
Fig 1: Location in the United States Coordinates: [37°39′ 22″ N 122°25′ 32″ W](#)

By [Uwe Dederding](//commons.wikimedia.org/wiki/User:Uwe_Dedering "User:Uwe Dederding") - Own work, [CC BY-SA 3.0](https://creativecommons.org/licenses/by-sa/3.0 "Creative Commons Attribution-Share Alike 3.0"), [Link](https://commons.wikimedia.org/w/index.php?curid=11267350)https://commons.wikimedia.org/wiki/File:San_Mateo_County_California_Incorporated_and_Unincorporated_areas_South_San_Francisco_Highlighted.svg

1. What is the setting of this case?

South San Francisco is on the sides of the broad valley made by the Coast Range on its west and the San Bruno Mountains on its north; the greater part of the valley faces the San Francisco Bay (City of South San Francisco 2019). The city's winters are not very cold, they are mild, and the summers are cool without much humidity, because of the hills on the west, the city is protected from fog (City of South San Francisco). The tax rate for South San Francisco is 8.5% which is average in California (California Department of Tax and Fee Administration). The average income of a person in South San Francisco is \$85,076 and it is predicted

to grow since from 2015 to 2016 it saw a 0.56% increase (City of San Francisco population). The economy of South San Francisco has about 25,247 employees and most of these jobs are in transportation and warehousing; wholesale trade; and real estate (City of South San Francisco).



The estimated population of South San Francisco is about 67,733 people; in this group of people, 5.4% are under 5 years old, 19.7% are under 18, 15.4% are 65 years and over, and 50.2% of the population are female(US Census Bureau). The race and origins of the population is diverse with 39.8% being asain, 33.8% being white, 33.9% being hispanic, 2.1% being African american, and the remaining 24.2% being mixed (US Census Bureau). The city has a diverse population in it's 30.19mi² of land (fig.2).

EPA EJ SCREEN DEMOGRAPHIC DATA

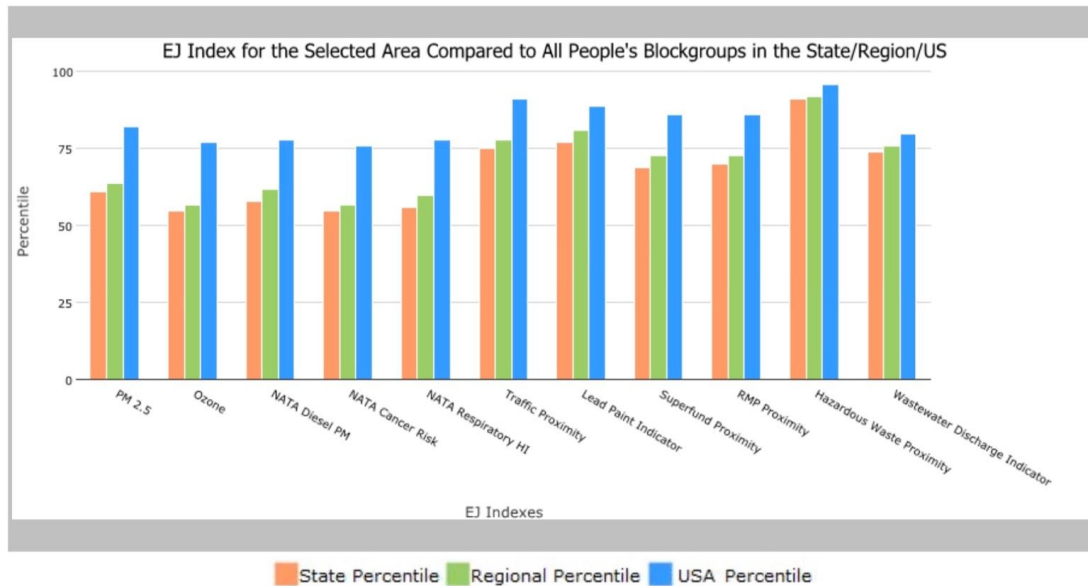
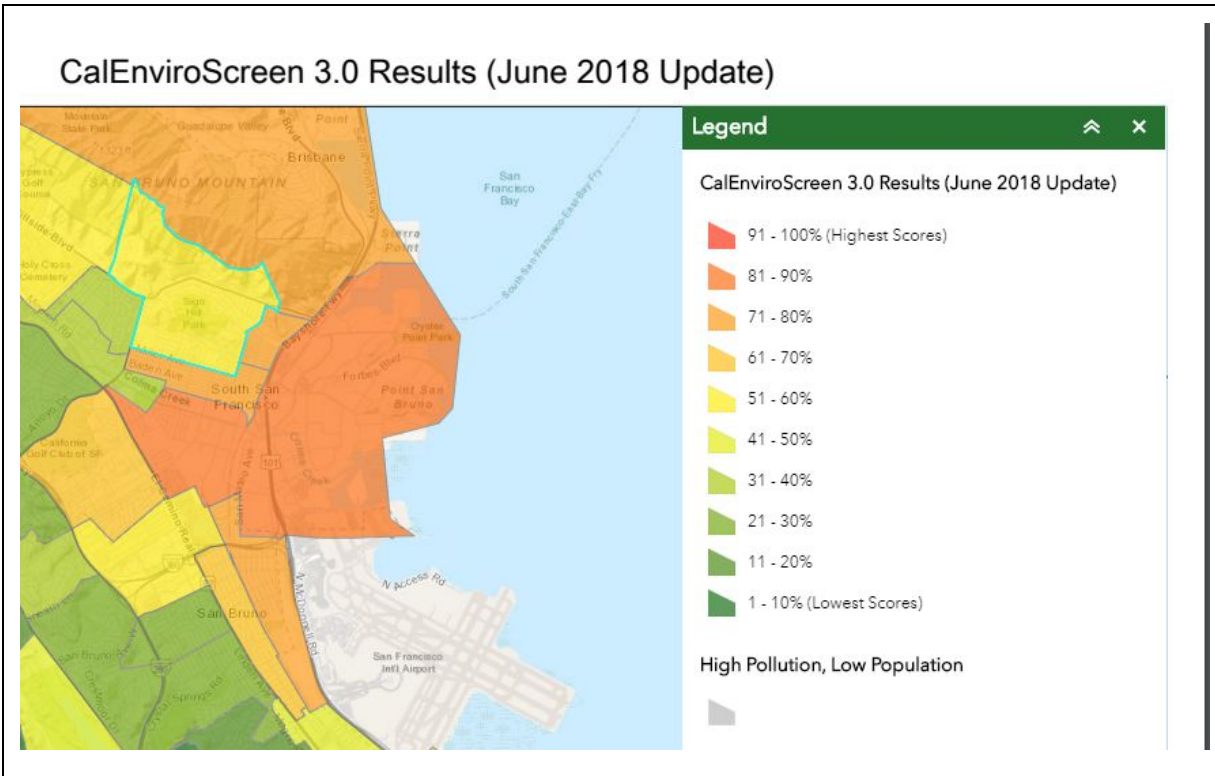


Fig. 3. Demographic Indicators for South San Francisco. EPA EJ Screen Report, *South San Francisco*, 2018. Retrieved October 23, 2019. Screenshot taken by Paul Trinh

The map above compares south San Francisco, the state, and the US as a whole in different categories to see how it compares (fig.3). For all of the categories the US is above San Francisco which is a good thing but also for every category south San Francisco is below the average for California. South San Francisco has a higher cancer risk, hazardous waste proximity, lead paint, traffic, along with other things. The city has a lot of potential for disaster but the citizens are not always aware of the risks they could potentially be in.

INSERT IMAGE: CAL ENVIRO SCREEN



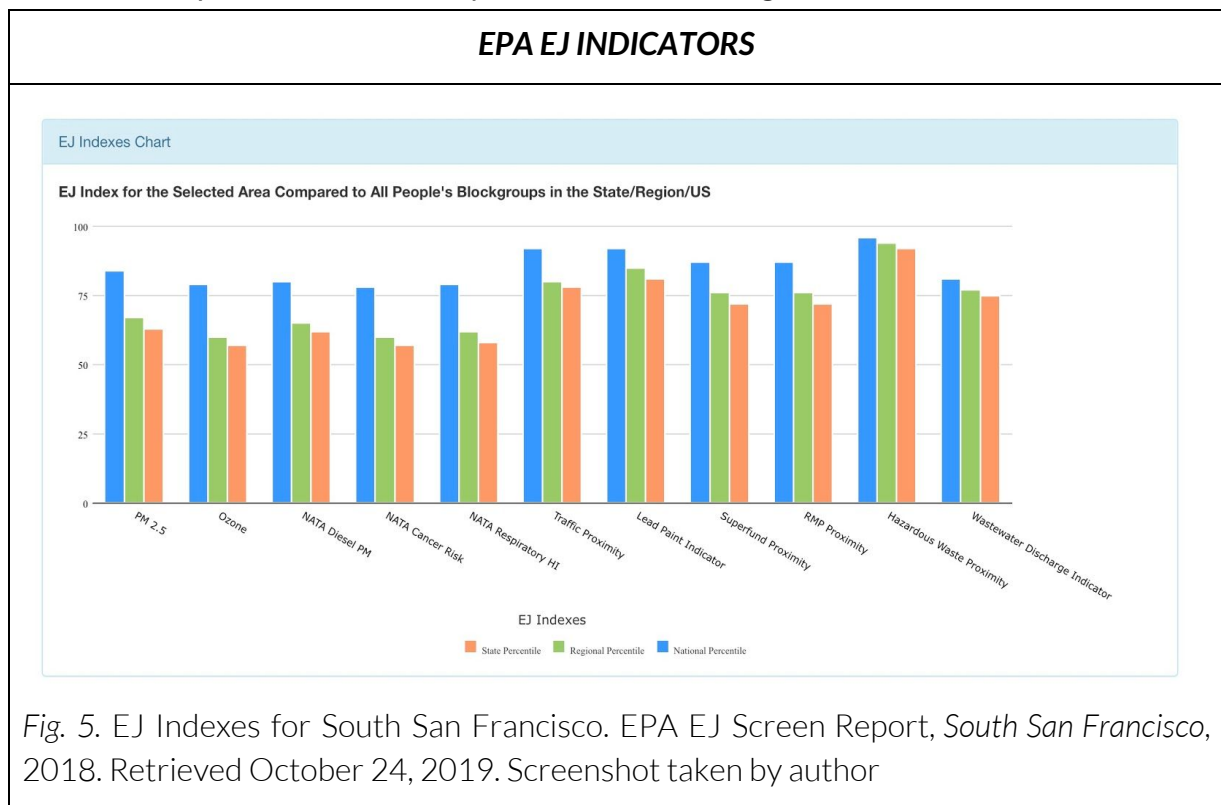
The data shows that south San Francisco is prone to environmental injustice since a lot of the population is made of minorities who don't usually know a lot about the risk they are exposed to in their community.

2. What environmental threats from *worse case scenarios* are there in this setting? What data is available to characterize worse case scenario potential? What other environmental hazards are there in this setting? [Dulce Garfias]

The city of South San Francisco is constantly placed in danger through companies that pollute the environment and especially the water on a daily basis. However, there are some companies that place a much greater threat because of the dangerous chemicals they use for their production. One specific example of this comes from Praxair Inc located only a couple miles from schools and homes. When looking into the safety sheets provided by Praxair, it was discovered that for their production they use chemicals such as Liquid Oxygen and Nitrogen Trifluoride, just to name a few. Within these safety sheets, the dangers of this chemicals warn the view that products such as Liquid Oxygen “may cause or intensify fires” as well as “ may cause cryogenic burns or injury”, indicating to the potential of a worse case scenario by the use of this chemical

(Praxair, 2016). Praxair also uses Nitrogen Trifluoride, whose safety sheet also warns of its dangerous because it “contains gas under pressure: may explode if heated”, “harmful if inhaled”, “may cause damage to organs”, and “asphyxiating even with adequate oxygen” (Praxair, 2016). Praxair poses a constant potential worst case scenario not only by its usage of dangerous chemicals but also the proximity it has to homes and schools that are most likely unaware of the threats.

In fact, back in 2017, the company was placed under investigation for its maltreatment of workers because workers deal with such dangerous chemicals, they are required to “remain with their vehicles to prevent exposure” of the “potentially dangerous chemicals” (Antell, 2017). Praxair alone, places a huge threat to the people of South San Francisco and specially its very own workers. The company has failed to find a safer way to keep its workers safe from the harmful chemicals while also providing them with the appropriate lunch breaks they deserve. This itself demonstrates how if the company can’t find a way to keep its employees safe, how will they be prepared for a worst case scenario that places the entire city and its residents at great risk.



The EPA EJScreen Report (2018) shown above, demonstrates the various environmental threats that the city of South San Francisco faces. As shown above (Fig.5), the city has a high percentile in many areas such as hazardous waste proximity, waste water discharge, lead paint, indicator, and traffic proximity. In terms of

comparison the regional percentile in many of these indexes is close or even higher than those of of state and national percentiles. For the most part, one can see that for every index each percentile is placed above 50 percentile and some even go above the 90 percentile, and that alone poses a great threat to the region and its people.

Other possible environmental hazards that have been found to place a great threat to the city of San Francisco is the issue of pollution. It has been reported that on an annual basis about “2.97 million gallons of oil” make their way into the Bay through runoffs caused by rainfall (Glen, 1999). Despite efforts the issues with pollution are still a huge problem in South San Francisco and its bringing harmful effects to not only the people of the city but also wildlife.

3. What factors -- social, cultural, political, technological, ecological -- contribute to environmental health vulnerability and injustice in this setting? Identify the census tract that scores the highest according to CalEnviroScreen’s index. Identify at least three sources of vulnerability. [Bethany Hatsios]

The environmental health hazards that the citizens of South San Francisco are exposed to come from various facilities producing goods with hazardous byproducts, companies that deal with toxic chemicals, and even a city water treatment facility that has toxic releases and disposes of treated wastewater into the San Francisco Bay. Contributing to this environmental vulnerability and the resulting injustice are factors such as environmental racism and economic inequality, and the reputation and political power of the companies, who are contributing the most to environmental health hazards.

The city is made up almost entirely, excluding a relatively small northern portion, of SB 535 Disadvantaged Communities and AB 1550 Low-income Communities (“California Greenhouse Gas Reduction Fund Project Map- BETA” n.d.). Census Tract 6081602100 makes up a small part of the city, yet nearly matches larger, nearby Census Tracts in population, making it an extremely densely populated area. This specific tract is within the 75-80% percentile and the overall pollution burden percentile of 71. Three of the main recorded sources of vulnerability in this area are ‘Education’ at 84, ‘Linguistic Isolation’ at 84, and ‘Housing Burden’ at 70. A larger section of the city, Census Tract 6081602300, is within the 80-85% percentile and the pollution burden percentile of 93. In this area, the largest sources of vulnerability are ‘Linguistic Isolation’ at 74 and ‘Education’ at 70. Both census tracts feature ‘Asthma’ as a large source as well, and are

characterized by a significant Hispanic majority of the population (“SB 535 Disadvantaged Communities” n.d.). South San Francisco CA has a population of 67,587 (2018) people, 57.3% of who speak a non-English language (City of South San Francisco n.d.). This demographic data helps explain the high levels of linguistic isolation and asthma. According to a June 2018 analysis of race/ethnicity and age in regards to the CalEnviroScreen 3.0 scores, by the Office of Environmental Health Hazard and the California Environmental Protection Agency, “Hispanic/Latino children had twice the risk of hospitalization for asthma from NO₂ exposure as white children” (Office of Environmental Health Hazard Assessment and California Environmental Protection Agency 2018).

In conjunction with this data, Figure 4 shows the disparity in unemployment rates within the Bay Area, where South San Francisco has a significantly higher unemployment rate than its neighboring cities (“South San Francisco, California Economy” n.d.). This factor, along with a higher burden of low education, linguistic isolation, and a housing burden, help explain the inability of many South San Francisco residents to move out of the “Industrial City”. Due to inherent environmental racism and economic inequality, the most heavily burdened areas of South San Francisco face increased environmental vulnerability and injustice.

The citizens of South San Francisco are not only facing increased health problems due to chemical exposure, but they are also at risk of fast chemical disasters that they cannot prepare for, since they are not even made aware of the danger they are in. For instance, one biotech corporation within South San Francisco, Genentech, uses the lack of information to maintain a positive image in the community. In the past however, Genentech has experienced a chemical spill, which led to one exposed worker going to the hospital for a health screening. The spill was contained within 1 hour of occurring, and fire officials in cooperation with Genentech would not disclose the name of the chemical spilled, nor the nature of its effect to human health (Lyons 2016). In this instance, Genentech worked against transparency in its operations in order to keep its public image on the positive side, regardless of the danger that its operations posed to the community. Genentech pushes this agenda further with programs under their “Corporate Giving” strategy. This initiative includes funding for community programs such as Futurelab, which hosts after-school activities to engage students in STEM fields (Genentech n.d.). While this company is providing support for, and funding the burdened community it is located within, the community itself cannot afford to stand up against the environmental danger and injustice at the cost of generous funding for programs from the company.

Ultimately, the South San Francisco communities most at risk of environmental health hazards, are not coincidentally also the communities facing environmental racism and economic inequality. On top of this, the companies contributing most to environmental health hazards use these burdens to suppress the communities' protests and maintain their own image and dangerous, faulty practices.

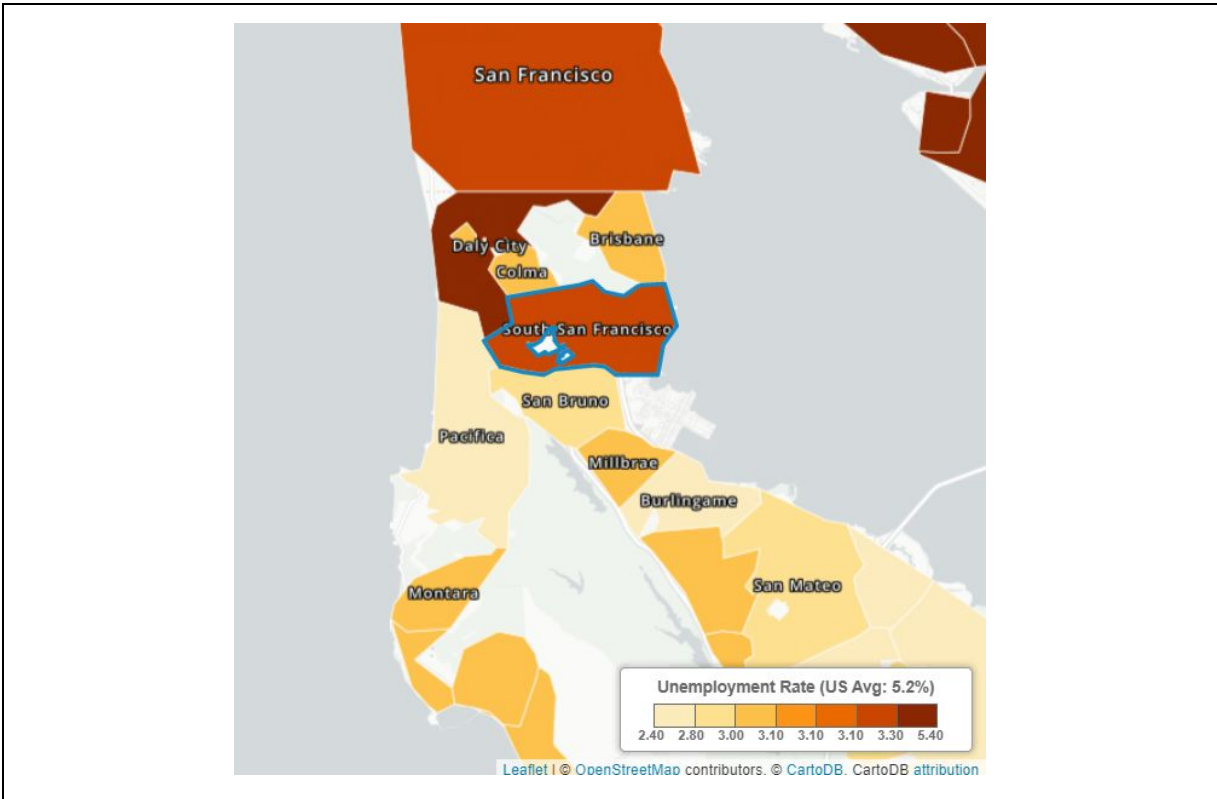


Fig. : The map shows the unemployment rates in South San Francisco and the surrounding areas. In comparison, South San Francisco has noticeably higher rates than nearby cities Screenshot taken by author from Best Places. N.d. "Economy in South San Francisco, California." Retrieved October 23, 2019.

https://www.bestplaces.net/economy/city/california/south_san_francisco

4. Who are the stakeholders, what are their characteristics, and what are their perceptions of the problems?

In the case of Shell Oil located in South San Francisco, there are five groups of

stakeholders: residents living nearby, the Chemical Safety Board (CSB), city officials and legislatures, Shell corporation, and the California Environmental Justice Alliance. The issue at hand concerns residents nearby because of the immediate danger that is posed to them if the compound with petroleum and other hazardous chemicals were to erupt in an explosion and spread its toxins to residents nearby. According to Whiting Oil and Gas Corporation, crude oil poses risks to aquatic life, human life, can cause cancer, and damage to organs, among other fatal effects (“Safety Data Sheet”, 2008). The population consisting mainly of Asian and Hispanic ethnicities, among other diverse backgrounds, are stakeholders and need to take their part in voicing their concerns to other stakeholders responsible for taking action (“Data USA: South San Francisco”, 2017). Assuming the residents are aware of the possible health and environmental risks, their perception of the problem is to demand action and minimize the potential danger. City officials of South San Francisco, more specifically, the Department of Economic and Community Development “responsible for the preservation and improvement of the physical and economic conditions” (“Economic and Community Development”, n.d.), must consider devising zoning ordinances that prevent Shell oil compounds being so closely located next to an Urgent care, Costco, and South San Francisco Bay.

Their focus on improving physical conditions and position as a stakeholder is needed to develop zoning ordinances or enact a type of legislation that will minimize the health and environmental hazards. Shell corporation should position themselves as Genentech has and support “community-based organizations as part of” their commitment to health (“Genentech: Corporate Giving”, n.d.). Their position, as any other corporations position, is to make profits while minimizing expenses; moreover, given the potential health and environmental risk, it makes financial sense to act their part as stakeholders and minimize the risks as to reduce potential liability costs. Additionally, since it is the Chemical Safety Board’s priority to make safety recommendations that “prevent the recurrence or reduce the likelihood or consequences of similar incidents or hazards in the future” (“Recommendations”, n.d.), they should act their part as stakeholders and assess the risks posed by the proximity of Shell oil compound to an Urgent care, among other facilities which residents frequently visit, in order to reduce the likelihood of an immediate disaster. Lastly, California Environmental Justice Alliance can voice their argument as a stakeholder and achieve their goal of “environmental justice by advancing policy solutions” (“Mission and Vision”, n.d.). This community-based organization can unite the residents living in South San Francisco and push for change and implementation in policy solutions, such as devising a zoning ordinance which prohibits from corporations such as Shell building oil refineries next to places where residents frequently visit and live.

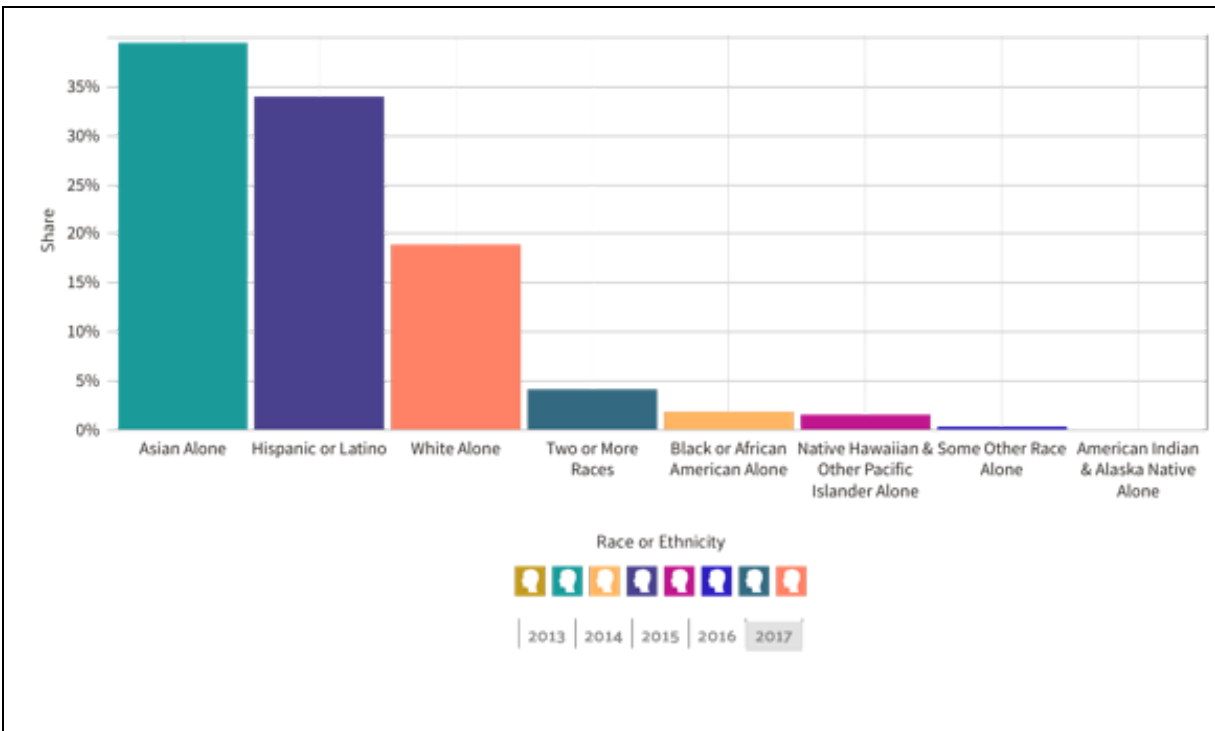


Fig: Figure showing the race and ethnicities of the residents in South San Francisco as of 2017.

Datausa.2017. "Data USA South San Francisco." Datausa.

<https://datausa.io/profile/geo/south-san-francisco-ca#languages>.

5. What have different stakeholder groups done (or not done) in response to the problems in this case? [Dominique Kim]

Of the stakeholders in South San Francisco, there mostly has been a lack of action and attention. The lack of action of parties that would be negatively impacted, such as residents, hospitals, schools and elderly, may be explained by the absence of information from companies such as Shell and various biotech companies as to what chemicals are being stored and emitted during production or refining. While looking for companies and potentially dangerous storage facilities, what I noticed was the lack of information from companies. One company, Eureka Chemical Company, advertises in large font on their website that they use non-toxic and non-hazardous chemicals in their products. However their product Fluid Film contains petroleum and is even listed as

highly flammable in its Safety Data Sheet (Eureka Chemical Company n.d.)(Product Stewardship 2015). By using petroleum products, they are providing business to an outside company that damages the environment and contributes to climate change and oil spills.

On the other hand, there have been some movements to protect and restore areas of the Bay that were damaged by disasters. One such instance is the response to the 2007 Cosco Busan oil spill. To help restore the habitat and damage caused by the spill, the shipping companies who cause the spill agreed to pay \$44.4 million. While some of the money will go towards agencies who responded to the spill as compensation, most of it was designated to habitat, facility and fishery restoration (Fimrite, 2011). Upon further thought, one wonders just how much of a loss \$44.4 million is to an oil company and whether a small monetary loss to the company is just a friendly front to cover something worse such as possibilities for another spill, hazardous conditions or improper disposal of chemical waste.

On a lighter note, in an article published by San Francisco native, Alastair Bland, he shares a vision from Richard Mullane to turn a hidden, unused trail (Bay Trail) into a natural reserve (Bland 2011). Richard is an urban designer with HASSEL, an Australian design firm. At the time of the article (June 2018), touching the water of the little creek running off San Bruno Mountain was a criminal act. By cleaning the water and hopefully allowing it to run its natural course through the city, they hope to open up access to residents of San Francisco, a touch of nature through a jungle city. Compromise and cooperation between environmentalist, architect, and the city continues to be crucial and visible as Common Ground team was chosen to participate in the Resilient by Design challenge to create a new highway while trying to preserve as much of the surrounding habitat as possible. Seeing the city take the environment and its inhabitants into consideration despite being pressed for time is an encouraging step towards future projects. Despite projects like Mullane and HASSEL's, Common Ground, and the oil spill clean up, there is still a sad lack of coverage by media, action from residents and honesty from potentially dangerous corporate stakeholders.



Fig: The large gash in the side of the transport ship that caused the Cosco Busan oil spill in the San Francisco Bay in 2007.

"Organic Geochemistry Analysis Lab." Organic Geochemistry Analysis Lab. Woods Hole Oceanographic Institute, 2010.

<https://www2.whoi.edu/site/gcxgcfacility/projects/coscobusan/>.

6. How have big media outlets and environmental organizations covered environmental problems related to worse case scenarios in this setting? [Jawara Li]

Through some research, we were able to find many local and national news outlets

covering the explosion and fire at the NuStar Energy Oil Refinery in Crockett California. This event occurred very recently on October 15, 2019. They don't know what exactly started the fire, but it's suspected that it could be the result of an earthquake (Cosgrove 2019). In the event, at least two 8,000 gallon ethanol tanks had caught fire and raged on for about six hours (Barmann 2019). NuStar Energy's facility in Crockett has 24 tanks with sizes ranging from 14,000 to 200,000 barrels and a total site capacity of about 3 million barrels, with tanks containing gasoline, diesel, aviation fuels and ethanol, according to the company (Cosgrove 2019). We were also able to find a local news outlet article on the toxic chemicals being emitted from the 17 oil refineries in California. The emission report was spurred by the aftermath of the 2012 fire at the Chevron Refinery in Richmond (Albarazi 2017). The report found that there were 188 identified chemicals being emitted from the refineries (Albarazi 2017). From the report, the following chemicals should be routinely monitored by the state, due to their toxicity and the volume emitted: acetaldehyde, ammonia, benzene, 1,3-butadiene, cadmium, diethanolamine, formaldehyde, hydrogen sulfide, manganese, naphthalene, nickel, PAHs, PM, sulfur dioxide, sulfuric acid, and toluene (Albarazi 2017).

The state is trying to make refineries safer by recommending enhanced air monitoring systems inside refineries and in nearby communities, as well as adoption of real-time reporting technology and better public notification (Albarazi 2017). While researching through the internet we were able to easily find many news outlets, both local and national, addressing the oil refinery problems in South San Francisco, but it was a challenge to find any environmental group covering the topic of oil refineries in the South San Francisco area. I found a national environmental group called Fracktracker Alliance which tracked refinery emissions in California's Bay Area. The website talks about regulations, environmental racism, health impacts of emissions, and air quality monitoring (Ferrar 2017). However, the website has not been updated since May of 2017. A local environmental group I found was the California Air Resource Board which had information on some of the refineries in California and links to air monitoring data (California Air Resource Board). However, some of the links in the websites no longer work and it seems like the website hasn't been maintained. Overall, it seems like information from news outlets are more easily accessible than environmental groups in the region of South San Francisco.



Fig. 6: Nustar Energy's oil refinery fire

Screenshot taken by author from abc7 news "Massive flames, smoke rise from NuStar Energy facility fire in Crockett near Rodeo" Retrieved October 26, 2019.

<https://abc7news.com/video-massive-flames-smoke-rise-from-nustar-energy-facility-fire/5621375/>

7. What local actions would reduce environmental vulnerability and injustice related to fast disaster in this setting? [Katherine Lopez]

Environmental vulnerability and injustice are only created when a community faces environmental issues around its surrounding. The Bay Area is prone to suffer from wildfires; which can endanger the ecosystem around it and create health problems for the community. Communities in South San Francisco are now facing environmental vulnerability due to wildfires. Local actions have been implemented in order to reduce environmental vulnerability and injustice. An environmental law has been passed by the governor Gavin Newsom in order to allow expedited fire prevention efforts so that new wildfire prevention strategies can be implemented. Preventions projects have arisen such as the dead trees removal near communities in the 'wildland urban interface.'" (Mulkern 2019). Power has been shut down in communities so that it can also reduce the chances of wildfire breakout (Mulkern 2019). The "0-80-100-Roots" plan is one action that can be taken to help the environment. The communities in San Francisco run this plan both to empower the communities by bonding and helping the environment at the same time. The "0" stands for zero waste. Which includes reducing waste, reuse

what you can, and recycling/composting. “80” represents eighty percent sustainable trips which suggest that you reduce the usage of solo car trips and to make the most of your trips on public transportation or carpool, biking, or simply walking. “100” is one hundred percent renewable energy (San Francisco Department of the Environment, 2019).

Another action that can be taken to reduce the environmental injustice in south San Francisco is the creation of community groups. This will create a voice for the community and can help bring awareness to the environmental health disparities they are facing. For example, when the company TetraTech, that was responsible for the cleanup of the shipyard filled with contaminates, failed to do their job and, thus, risked the health of nearby residents (Dautch and Ellington, 2018). Local actions needed to be done in order to insure the communities’ health. A community group could help bring attention to these issues. Another type of action is the creation of laws that protected against health problems caused by environmental issues. For example, the environmental law that was passed by the governor Gavin Newsom that allow new wildfire prevention strategies. I believe that all these actions need to be a priority because they all ensure that all aspects of environmental vulnerability will be addressed.





Fig 7: The “0-80-100 Roots” plan of action. Sfenvironment.org - Our Home. Our City. Our Planet. (2019). Take Action for the Environment: 0-80-100-Roots. [online] Available at: <https://sfenvironment.org/fil/take-action-for-the-environment-080100roots> [Accessed 26 Oct. 2019].

8. What extra-local actions (at state, national or international levels) would reduce environmental vulnerability and injustice related to fast disaster in this setting and similar settings? [Abigail Mesel]

Environmental vulnerability and injustice in South San Francisco would be most effectively reduced on the individual state level, through basic regulations and requirements, with the stipulation, of course, that these regulations and requirements are upheld. The government agency, EPA, maintains a website that offers a resource for searching for facilities that own a permit for disposing wastewater into rivers. The resource also gives information as to how much the company is allowed to discharge and monitoring data on what they are discharging. The South San Francisco - San Bruno Water Quality Control Plant is described on the City website to discharge the treated wastewater into the San Francisco Bay. Yet, when searched for through the resource, there is no such documented permits. If searched through the “PCS Search” the site will suggest a redirection to the updated “ICIS Search” since the former has since been made obsolete (“PCS Search” n.d.)¹. Searching with the latter will present a similar result,

directing the user to try the PCS system (“ICIS Search” n.d.)². Upon further investigation, it can be found that for most if not all states, the results maintained by the EPA for both systems has been “frozen” and can not be accessed through their system any longer. Additionally, the EPA’s EJScreen tool has some serious accuracy issues. For example, there is a Shell Fuel Products storage facility located less than half a mile away from a Costco Wholesale location, the South San Francisco Water Quality Control Plant, and the San Francisco Airport (“Google Maps Search.” n.d.). In the EJScreen tool, this storage site does not appear as a source for hazardous waste, and there is no way to see on the map that the location is so close to heavily populated or at-risk locations (“EJScreen Map of South San Francisco.” 2019). These are prime examples of a huge problem: a supposedly comprehensive, detailed system for regulating company actions regarding the environment does not provide current, necessary information for people to make informed decisions about the safety of their home.

The first and most important action that needs to be taken at a national level to reduce environmental vulnerability and injustice is a massive increase of funding for agencies like the EPA. Since 2010, the EPA’s annual budget has decreased by over \$4 billion (U.S. EPA. 2019). As a country, we should be funneling more resourcing to organizations that can provide assistance in counteracting environmental injustice and vulnerability. Additionally, the state government could contribute by conducting much more frequent surveys that include information such as locations of water treatment plants and heavily trafficked consumer areas and relaying this information to the EPA so the publicly available tool is much more effective. Lastly, a regulation at the federal level should be passed that requires realtors, landlords, and any other party involved in selling housing is required to provide information regarding sites with fast disaster potential within a five mile radius as well as the local safety procedures in the case of a worst case scenario. This would enable a much more widespread awareness of possible dangers without expecting everyone to go searching for the information themselves. It would also allow people to include environmental justice in their decision making process when deciding where to live.

9. What kinds of data and research would be useful in efforts to characterize and address environmental threats (related to fast disaster, pollution and climate change) in this setting and similar settings? [Apisaloma Siufua]

With the whole issue about San Francisco being cited by the EPA for water pollution,

there were quite a lot of concerns about the sewage system and the water quality (Alexander, Kurtis). According to the data coming from the California Office of Environmental Health Hazard Assessment (OEHHA) in Fig. 8, South San Francisco has quite a high pollution Burden Score that would seem to average about 71%. South San Francisco has a high percentage when it comes to Groundwater Threats, Impaired Water, Cleanups which are cleanup sites that contain harmful chemicals and needs to be cleaned up by the property owner or government, Hazardous and Solid Waste. Data and research on the production, disposal, and transportation of resources from chemical companies like Eureka Chemical Company or Shell Oil Products in the South San Francisco would be most useful in assessing what exactly are the environmental threats and how to address them. Data and research on the sewage systems in San Francisco and tests on the water quality to see what exactly is in the water would help conclude the sources for the impaired water pollutions. With South San Francisco having a high percentage of both Groundwater Threats and Impaired water, it is clear that both the Sewage system needs to be analyzed and the water quality as well.

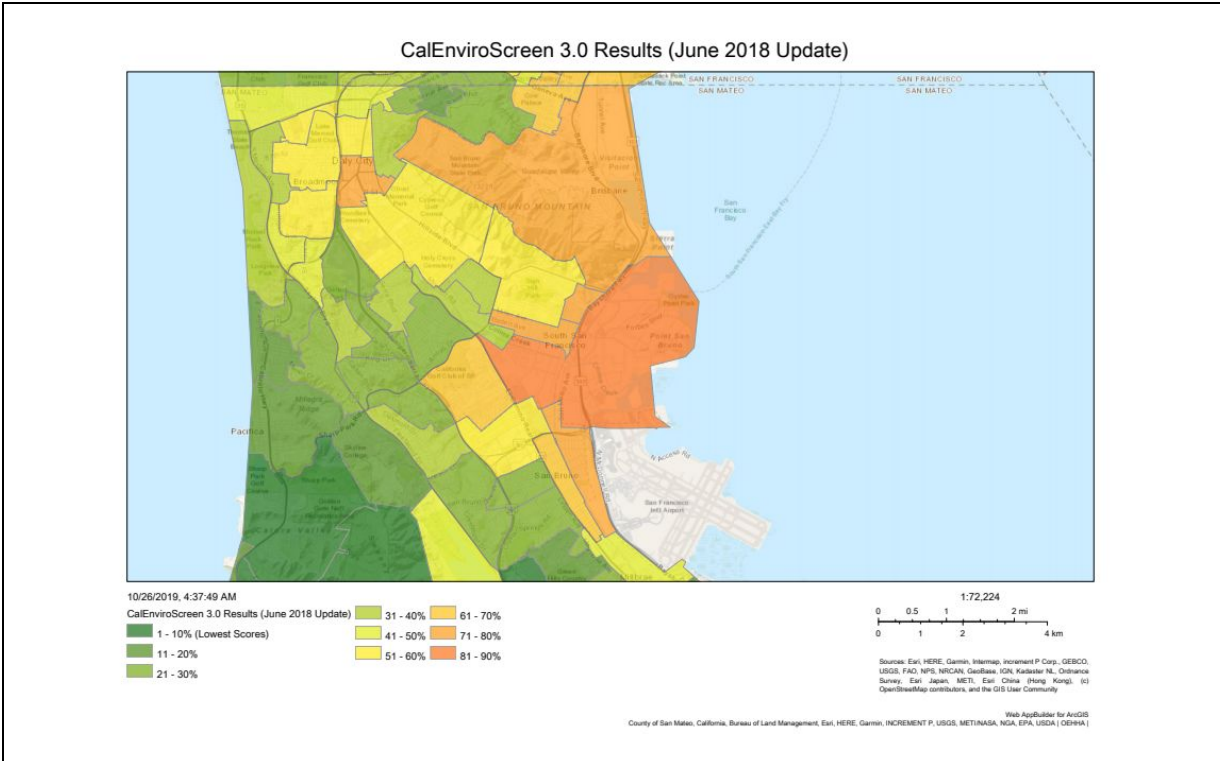


Fig. 8: Pollution Burden Percentage map of South San Francisco

**10. What, in your view, is ethically wrong or unjust in this case?
[PAUL C. N. TRINH]**

With of all the previous information covered, the extent to which ethical malpractice, concerning chemical safety, occurs in South San Francisco varies from corporation to corporation, governmental and even at a media level as well. One notable incident was that of biotech company, Genentech's chemical spill which Lyons (2016) covers in her article; she reports, how after an employee exposed to the chemical was transferred to a hospital for a screening, firefighters and Genentech officials wouldn't disclose the name of the chemical nor the nature of its harmful effects to the human body. Although appropriate measures to contain the spill took place, an ethical injustice that can be witnessed is the fact that the chemical wasn't disclosed to the public and shows a lack of transparency in Genentech's operations when it comes to potentially hazardous chemical disasters. This lack in initiatives to further public safety and transparency could be a result of yet another ethical injustice: pressures from the current administration in Washington to lessen bureaucratic oversight of companies dealing with hazardous material. According to OSHA's webpage, "*Chemical Hazard Communication*", its consultation service that it could provide to companies like Genentech only, "is available on request to employers who want help in establishing and maintaining a safe and healthful workplace. Largely funded by OSHA, the service is provided at no cost to the employer". Considering how Khimm (2018) cites "OSHA has faced ... government-wide hiring freeze; a push to reduce the workforce through attrition; proposed budget cuts; and deep uncertainty about future funding", OSHA's presence in the future to provide chemical safety consulting and oversight that would otherwise hold biotech companies like Genentech accountable could become depreciated overtime.

This all lends itself to disincentivizing OSHA agents from being more stringent in their collaboration with companies because they're bank rolled by a government that is causing understaffing and it's not likely that corporations would want to pay agency fees themselves. A third and final ethical injustice concerning this case is the lack-luster effort with which reporting takes place concerning hazmat incidences in South SF. Lyons (2016) report was very short and provided minimal detail beyond that already mentioned. Her report along with that of many others reporting on similar stories in South SF don't further pursue coverage over investigations to, "determine the cause of the incident.", as in Palmer's (2014) article covering a chemical explosion at yet another biotech company: Amgen. It seems therefore that not a lot of channels are easily accessible for the South SF public to learn about the hazards in their local companies.

Rather they would have to go through extraneous circumstances to acquire such information like contacting the hospitals that dealt with the survivors of each incident.



Figure 9: Genentech Building. 1 DNA Way

Source: Lyons, Jenna. 2016. "Chemical Spill Sparks Hazmat Scare at Genentech in South SF - SFGate." SFGate. July 13, 2016.

<https://www.sfgate.com/bayarea/article/Chemical-spill-sparks-hazmat-scare-at-Genentech-8376428.php>.

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APPENDIX

ABOUT THE AUTHORS

BIOGRAPHICAL STATEMENTS

Bethany Hatsios is a first-year Earth Systems Science major at UCI. She hopes to pursue a career in geology and eventually exogeology. She is concerned about the relationship between the practices of large corporations and burdened communities. Furthermore, she is interested in environmental ethics, and the health implications resulting from dangerous chemicals and unethical environmental practices.

PHOTOS



Dulce S. Garfias is a first-year Psychology student at the University of California, Irvine. Her areas of interests revolve in the human mind, behavior and interactions with society and she is also interested in political issues and is considering minoring in political science.



Jawara Li is a second year Environmental Engineer at the University of Irvine, California. He is interested in renewable water projects and his goal is to work for the water district to help make the world more sustainable.



Katherine Lopez is a Public Health Science at the University of Irvine, California. Currently interested in learning about intervention that can help the community's overall health.



Abigail Mesel is in her first year of studying Music at the University of California, Irvine. She is also interested in chemistry and forensics. She is particularly interested in toxicology and the long term impacts of pollution and climate change on human health. She is considering adding chemistry as a second major and pursuing forensics or environmental science in graduate school.



Apisaloma Siufua is a second-year student at the University of California, Irvine. He is currently undeclared but is considering becoming a Mechanical Engineering major. He is interested in Mechanical drafting and technical sketching and his goal is to obtain a career as a Mechanical Technical Drafter in the Prosthetic Industry.



Paul Trinh is a second-year undeclared major at the University of California. He is interested in pursuing a major in Mathematics. His interests include probability and risk-assessment as it pertains to his goal of becoming an actuary, a career that deals in creating insurance and pension policies.

