

Introduction

Throughout the United States, communities of color and of lower socio-economic status are disproportionately affected by toxins and pollutants in the air. Pollutants include nitrogen oxides, sulfates, benzenes, and cigarette smoke, which have been linked to pulmonary fibrosis, lung cancer, and leukemia¹. This is significant, because five times as many Black children suffer from asthma as white children¹. Blacks are more likely to live near sources of air pollution, even after controlling for SES and political participation^{2,3}, and Black communities are at an increased risk of chemical accidents⁴.

These inequalities are examples of environmental racism, or when, “institutional rules, regulations, and policies of government or corporate decisions deliberately target certain communities for least desirable land uses, resulting in the disproportionate exposure of toxic and hazardous waste on communities.”⁵

This policy brief will highlight inequalities in air pollution in the Bay Area, with a particular focus on Richmond, West Oakland, and Hunters Point. Traffic, freeways, power plants, and refineries play critical roles in contributing to air pollution within these communities, which puts them at risk for respiratory illnesses.

Traffic and Freeways

Living near freeways or trafficked areas is a hazard for respiratory health.

In a cross sectional study examining the relationship between freeways and asthma in the San Francisco Bay Area, researchers found that not only were there higher concentrations of nitrates closer to freeways, but children who lived within 75 meters of a freeway had higher rates of asthma. Specifically, children had a 36% increase in

the odds for asthma and almost a 50% increase in the odds of bronchitis. Crowding, pests, mold, chest illness, and maternal history of asthma were all controlled for⁶.

Traffic not only influences the air in the home but also in schools. In schools that had relatively good air quality in the Bay Area, the simple factor of being closer to freeways and heavily trafficked areas lead to increased levels of black carbon, nitrogen oxides, and nitrogen dioxides. These children had a 7% increase in odds for asthma from just one year of going to that school. The increase in odds was modest, but this study shows the potential detriments of living near heavily trafficked areas for an extended amount of time.⁷

West Oakland is especially impacted by traffic and freeways, and it is not a coincidence that a majority of its residents are minority and lower income. 58% of the residents are African American, 19% are Latino, and the community overall is of lower income. This neighborhood is surrounded by a port, freeways, and multiple industries^{5,8}. In fact, West Oakland is the fourth busiest port in the United States. Due to all of the port activity, West Oakland is plagued by diesel, the smoke that exits buses, trucks, ships, and trains. Using aethalometers, which measure smoke and suspended particles in air, community researchers found that citizens breathe in 5 times as much diesel as other Oakland residents. Residents describe black soot on their window sills and heating vents⁹. Having high levels of exposure to diesel has been linked to cancer, respiratory problems, and asthma, and it probably contributes to children in West Oakland having 7 times more hospitalizations due to asthma than other areas in Alameda County. Residents also have 5 times the higher risk for developing cancer, as compared to other Oakland residents¹⁰. In addition to the issue of proximity to diesel exhaust, trucks do not comply with laws that limit their ability to drive and park in

neighborhoods⁹. Future sections will explore potential policy interventions to address this.

Power Plants and Refineries

Living near power plants and refineries also impacts air quality (among other factors).

In a time series analysis carried out in an Israeli community near two power plants, researchers examined the effects of fine particles emitted from the power plants on children with asthma. After controlling for seasonal and meteorological conditions, SES, BMI, asthma severity, and parent smoking status, results showed that living near a power plant was linked with worsened asthma due to fine particles, such as PM₁₀ and PM_{2.5}¹¹. Power plants directly impact respiratory health.

The two major examples of communities affected by power plants and refineries are North Richmond and Hunters Point. North Richmond is home to five major oil refineries, three chemical companies, eight Superfund sites, dozens of other toxic waste sites, highways, two rail yards, and ports and marine terminals where tankers dock¹². Like Oakland, the community is mostly minority and lower incomes, with 97% of residents identifying as Latino, Black and Asian.

Silent Springs, a non-profit research organization, in collaboration with other universities, has found that pollutants from the Chevron refinery, the biggest polluter in Richmond, are getting trapped inside community homes. Comparing pollution levels to a neighboring community, Bolinas, which does not have any power plants or refineries, chemical levels, were a lot lower¹³.

The Chevron refinery released 575,669 pounds of chemicals into air, water, and waste facilities in 2010, more than Alameda or Santa Clara County combined. Chemicals include 3,807 pounds of benzene, 135 pounds of 1,3-

butadiene, and 606 pounds of nickel...toluene, hydro cyanide, ammonia, sulfuric acid¹². These chemicals are linked to cancer and neurological effects. Benzene levels, which are linked to leukemia, also keep rising every year¹². With all of the air pollutants in the air and in homes, it is no surprise to find that Richmond has the highest hospitalizations rates due to asthma in Contra Costa Country.

Hunters Point, just south of San Francisco, eerily mimics Richmond. About half are Black, 28% are Asian, 17% are Latino, and most are low income¹⁴. Like Richmond, Hunters Point has a conglomerate of toxins. There are 187 leaking underground fuel tanks, 500 acres of contamination, 100 Brownfield sites, a PG&E Plant that emits 600 tons of respiratory pollutants per year, and one major sewage plant.¹⁵ The PG&E power plant is the greatest source of pollution, but the water treatment plant and diesel fumes also contribute. With all of these pollutants, the community has elevated levels of asthma and lung cancer. Hunters Point has a 10% overall asthma rate, as compared to the 5.6% national average¹⁶, and lung cancer causes the most cancer deaths in Bay View Hunters Point¹⁵. The proximity of the plants to housing can also trigger asthma attacks. Marie Harrison knows of two childhood deaths, just blocks away from the plant, due to asthma attacks.¹⁷

Existing Policies

The major legislation working to reduce air pollution on a federal level is the Clean Air Act of 1970. This act gives the Environmental Protection Agency (EPA) the power to regulate air pollutants¹. As part of the Clean Air Act, RFG, or reformulated gasoline, was mandated in certain areas. This gasoline burns cleaner¹⁸. Researchers found that the greatest decrease in benzenes in San Francisco Bay Area tunnels was between 1995 and 1996 when RFG, or reformulated gasoline, was

implemented¹⁹. Thus, the Clean Air Act and its amendments have to potential of reducing pollutants in the air.

Regulating gasoline and diesel use has also been effective. Researchers found that when the California's Clean Fuel Regulation and North American Emissions Control Area required ships to use fuel with lower amounts of sulfur in West Oakland, particular matter (including sulfates) decreased in the air of not only West Oakland but surrounding Bay Area communities²⁰. Moreover, in Richmond, when the Chevron refinery incorporated burners that cut nitrogen oxides, a main ingredient of smog, 90 percent of the emissions were reduced¹².

Policy Implications

Despite existing policies, there are still inequalities in air pollution and issues that must be addressed.

In West Oakland, trucks illegally park and navigate through residential areas, increasing the proximity of exposure to diesel exhaust. There must be a policy that increases enforcement of legal routes, and implements a new route that goes around neighborhoods. Inspired by previous fuel regulations, there should also be more incentives to replace old trucks with trucks that burn fuel cleaner and do not use diesel²¹. We must ditch diesel¹⁰.

For Richmond and Hunters Point, there is a need for regulating refineries, and motivating companies to make their processes cleaner, with fewer chemicals released into the air. For example, there must be rules prohibiting routine flaring, in which chemicals are released into the air as a method of burning off excess gas. There must also be stricter regulations on how many chemicals are released²¹. Companies may resist, but as shown by Chevron's reduction of nitrogen oxide, it is not only possible but effective. We

must also hold refineries and power plants accountable, with strict enforcement of fees and penalties if they do not reduce their emissions.

A more downstream intervention is to mandate the installation of a ventilation system in every single house in high risk areas. Even if the outside air is polluted, community members (especially children) will mostly breathe high quality air¹⁰. Critics may point to the financial cost of these systems, but the long term financial costs of hospitalizations, medications, and decrease in life expectancy/quality of life are a greater financial burden.

Finally, there are no federal laws to protect communities from environmental racism. There have been previous attempts to appeal to the fourteenth amendment, but it is difficult to prove malicious intent²². Title VI, Civil Right Act 602, which states that programs under federal assistance cannot perpetuate discrimination, could prevent against environmental racism. Yet the case of *Alexander vs Sandoval* revoked this responsibility from federal agencies²². Thus, it is important to continue advocating for policies such as Title VI 602. All community members reap the benefits of refineries, but a selected few are disproportionately paying the costs. It should not be a question of money or power but of human rights.

Links to Useful Resources

The Bay Area Environmental Health Collaborative: <http://www.baehc.org/>

Coalition for Clean Air: <http://www.ccair.org/>

West Oakland Environmental Indicators Project: <http://www.woeip.org/>

EPA Air and Radiation:
<http://www.epa.gov/air/index.html>

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