Historical Overview

Too often hazardous waste facilities, sanitary landfills, refineries, and other polluting industries have been sited in poor communities and communities of color, creating distasteful, noxious, and unhealthy living conditions. Furthermore, governmental response to these injustices has been slow and incomplete. The Environmental Justice (EJ) movement grew in response to these discriminatory practices. Drawing on the Civil Rights movement and the legal foundation of Civil Rights Act of 1964, environmental justice advocates brought public attention to the common practice of intentionally placing environmental toxins in the proximity of African American communities. The EJ movement picked up momentum in the 1980s, after court cases charging racial discrimination in the siting of toxic waste facilities and the subsequent publication of an important federal study, *Siting of Hazardous Waste Landfills and Their Correlation with Racial and Economic Status of Surrounding Communities*.1,2

The National Environmental Policy Act (NEPA) of 1969 set a standard of safe, healthful environments for all Americans and instituted the requirement of environmental impact assessments on federal government projects. The EJ movement helped to force recognition that these impact assessments were not adequately considering impacts to communities of color. In 1994 Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* was issued. This order focused attention back on the intent of NEPA and called for improved assessment of exposure, risk, and impacts on the poor and people of color, in addition to addressing mitigation and involving communities in the process. Congress, however, subsequently failed to pass the Environmental Justice Act, blunting the impact of these policies. Litigation in the area has not been successfully pursued. As a result, environmental justice advocates must continue to fight to ensure polluters are not disproportionately concentrated in communities of color and to ensure environmental standards are enforced.3-5
What Research Tells Us

The San Francisco Bay Area is a major metropolitan area with a large volume of traffic, commerce, and industry. As a result, all Bay Area residents are exposed to levels of air pollution that are above state air quality standards for both ozone and diesel particles. However, some Bay Area residents are exposed to much higher levels of air pollution than others by virtue of where they live and go to school. And while technological advances and regulatory processes have led to decreased vehicle and industrial emissions in the last three decades, these improvements have been offset by huge increases in the number of vehicles on the road, the number of miles traveled, and the volume of goods being transported.

Yesterday’s Zoning, Today’s Toxic Neighborhoods

A growing body of research provides strong evidence that poor people and people of color are much more likely than Whites and those with higher incomes, to live in close proximity to areas with high levels of air pollution, such as freeway interchanges, ports, railways, and industrial toxic release sites. It is no accident that vulnerable populations (children, elderly, poor, non-White) live in areas with the worst air quality. Those who can least afford to be sick and have the least access to health care and other social commodities have often been excluded from the land use planning process and decisions that shape the environment in which they live. Historically, zoning ordinances effectively maximized property values of the wealthy while simultaneously relegating low income and people of color to areas zoned for industrial use. While many historical land use decisions cannot be undone, planners, policy makers, and public health officials have a duty, not only to protect residents in polluted areas from excess exposures and health risks, but to engage community residents in the mitigation process wherein community development, regulatory, and other decisions are made.

Dirty Air from Transport, Industry and Our Everyday Lives

Air pollution, or outdoor toxic air contaminants, comes from three main sources: 1) mobile sources such as cars, trucks, trains, and ships; 2) stationary sources, such as factories and power plants; and 3) area sources, such as fireplaces, lawn mowers, and dry cleaners. Diesel exhaust is an extremely harmful component of air pollution, especially the smaller particles 2.5 microns or less in size. Diesel particles contain toxic and carcinogenic compounds, including benzene, arsenic, and formaldehyde. These compounds can go deep into the lungs and directly into the blood stream. Additional toxic air contaminants are present in other motor vehicle exhaust and industrial emissions, including nitrogen oxides, sulfur dioxide, ozone, lead, acrolein, and dioxin.

Children and Workers Pay the Highest Health Price

Long-term exposure to air pollution leads to higher rates of illness and premature death. Truckers and heavy equipment operators who work around diesel exhaust are at increased risk of lung cancer. Shorter term exposures can make allergies, asthma, and chronic bronchitis worse. Air pollution also can affect fetal development, decrease lung function, and increase susceptibility to respiratory infection. Many air pollutants have recently been found to be harmful to more vulnerable groups, including children, the elderly, and asthmatics, at levels that were previously thought to be safe. In fact, exposure to air pollution may actually affect the long-term development of young children’s respiratory, nervous, endocrine, and immune systems. Children, especially, may be more vulnerable to air pollutants because they breathe more rapidly than adults, they tend to breathe through their mouths, their immune systems are not fully developed, and they spend more time outdoors.
A Look at Alameda County

Air Pollution from Industrial Sources

In this section, characteristics of Alameda County residents living in close proximity to industrial toxic release sites are examined in relation to the population living at greater distances from those sites. This approach was used in an earlier study of the Greater Bay Area and the findings are consistent with that study. They show that poor people and people of color are exposed to higher concentrations of industrial air pollutants in Alameda County than are wealthy people and White people, in part because they live in closer proximity to stationary sources of industrial pollution.

Figure 42 shows that non-White residents are more likely to live near a polluting facility than White residents. The percentage of non-White residents, particularly African Americans and Latinos, is greatest within 1 mile of a toxic release facility and grows smaller at greater distances. The percent non-White decreases from 71% within 1 mile of a toxic facility to 62% within a 1 to 2.5 mile radius, and to 45% at a distance of more than 2.5 miles.

Similarly, Table 7 shows that the percentage of the population living in poverty is highest within 1 mile of toxic release sites (13.4%) and lowest at 2.5 miles (7.4%). The differences are even more pronounced for children under 5 years of age: 15.8% of those living near a toxic facility live in poverty compared to 6% of those living 2.5 or more miles away. Per capita annual income decreases with proximity to a facility, while the percentage of recent immigrants and foreign born increases. In addition, home ownership is lowest, 52.7%, nearer the sites.

Table 7: Proximity to Toxic Air Release Facilities by Demographic Characteristics, Alameda County

<table>
<thead>
<tr>
<th>TRI Proximity</th>
<th>&lt;1 mile</th>
<th>1-2.5 miles</th>
<th>&gt;2.5 miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Below poverty</td>
<td>13.4</td>
<td>12.2</td>
<td>7.4</td>
</tr>
<tr>
<td>% Children &lt;5 below poverty</td>
<td>15.8</td>
<td>14.4</td>
<td>6.0</td>
</tr>
<tr>
<td>Per capita annual income</td>
<td>$21,343</td>
<td>$24,835</td>
<td>$33,512</td>
</tr>
<tr>
<td>% Homeowners</td>
<td>52.7</td>
<td>50.3</td>
<td>63.7</td>
</tr>
<tr>
<td>% Recent immigrants (&gt;1980)</td>
<td>24.9</td>
<td>21.2</td>
<td>15.3</td>
</tr>
<tr>
<td>% Foreign-born</td>
<td>32.5</td>
<td>28.0</td>
<td>22.2</td>
</tr>
</tbody>
</table>

Note: Census 2000 block group data used for analysis. Sources: TRI 2005; Census 2000.

Figure 43 demonstrates that racial/ethnic disparities persist even when income level is taken into account. The percentage of each race/income group living within a mile of a toxic air release facility declines with increasing income. Most notably, the percentage of ev-

Sources: TRI 2005; Census 2000.
ery non-White group living within a mile of a facility is higher than Whites at every income level.

**Air Pollution from Roadways**

In Alameda County the proportion of African Americans and Latinos living within 500 feet of freeways is higher than in areas beyond 500 feet of freeways (41% versus 33%).

Higher levels of toxic air contaminants have been documented around schools near and downwind of busy roadways, and children attending these schools are more likely than other children to have asthma symptoms. Legislation passed in 2003 prohibits new schools from being situated within 500 feet of a high-volume roadway (≥100,000 vehicles per day). While there are no private schools situated so close, there are 10 public schools, K-12, that lie within 500 feet of a high-volume freeway (Table 8). These 10 schools, serving over 5,400 children, most of them in elementary school, could not be built in their present locations today due to unacceptably high levels of air pollution. Seven of the 10 schools are in the Oakland Unified School District, and 1 each is in Fremont, Hayward, and San Leandro Unified School Districts.

<table>
<thead>
<tr>
<th>% Students FRPMP</th>
<th>Not Within 500 Ft</th>
<th>Within 500 Ft</th>
<th>Within 500 Ft</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not high poverty (&lt;60%)</td>
<td>206</td>
<td>24</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>High poverty (≥60%)</td>
<td>106</td>
<td>23</td>
<td>7</td>
</tr>
<tr>
<td>Total schools</td>
<td></td>
<td>312</td>
<td>47</td>
<td>10</td>
</tr>
<tr>
<td>% Schools high poverty</td>
<td></td>
<td>34.0</td>
<td>48.9</td>
<td>70.0</td>
</tr>
</tbody>
</table>

*Notes: Proximity to freeways: 1) not within 500 feet of medium- or high-volume freeway, 2) within 500 feet of medium-volume freeway (25,000 to 100,000 vehicles per day), and 3) within 500 feet of a high-volume freeway (≥100,000 vehicles per day). Source: California Department of Education 2006-2007.*

Using the percentage of students on Free or Reduced Price Meal Programs as a proxy measure of poverty, schools were classified as high poverty if 60% or more students were enrolled in the program in the 2006-2007 school year. Table 8 shows that high-poverty schools are more likely than other schools to lie in close proximity to freeways. Just over one-third (34.0%) of schools not near medium- or high-volume freeways are high-poverty schools, compared to almost half (48.9%) of schools near medium-volume freeways and 70% of schools near high-volume freeways.

These data suggest that over 35,000 children in Alameda County are exposed to medium to high levels of traffic pollution every school day. Many of these children, especially in the high-poverty schools, carry an additional burden of being economically disadvantaged; many of them are English learners and many do not achieve proficiency in language arts. This inequitable pattern has been observed statewide as well. In order to protect the health of these children, ongoing monitoring of potentially harmful exposures and their health consequences is critical to informing future policies aimed at achieving environmental and health equity.

**Air Quality in West Oakland**

West Oakland residents breathe air with 3 times more diesel particles in it than the Bay Area in general. Air pollution exposure of this magnitude translates to a 2.5 greater lifetime risk of cancer compared to that in the Bay Area. Most of this excess risk (71%) is due to diesel trucks transporting goods on freeways around the area as well as into and out of the Port of Oakland and the Union Pacific Rail Yard. Other environmental justice researchers have estimated the excess exposure to diesel particles in West Oakland to be even greater,
5-fold indoors to 9-fold outdoors.\textsuperscript{26,27} The problem goes beyond West Oakland. Alameda County census tracts with major freeway interchanges, truck traffic, and industry (e.g., San Leandro and Castro Valley) have a substantially higher risk of cancer and respiratory disease when compared to the nine-county Greater Bay Area.\textsuperscript{7}

Health Impact of Air Pollution: Childhood Asthma

Asthma is generally a manageable chronic condition. Asthma attacks can be triggered by respiratory infections and allergens, including dust, mold, and air pollution.

The rate of emergency department (ED) visits for asthma countywide among school-age children (5-17 years of age) is 661.1 per 100,000. As Map 8 shows, this rate increases by two- to three-fold in West Oakland, North Oakland, and Emeryville (range: 1,332.5 to 1951.6 per 100,000). These areas have large African American populations and many low-income residents living in the midst of major sources of air pollution and bearing a disproportionate burden of illness. Rates exceeding the county rate by 50\% or more are found along the I-80, I-880 and I-580 corridors in Berkeley, Hayward, San Leandro, San Lorenzo, Castro Valley, and Newark.

African American children in Alameda County are disproportionately affected by asthma, with a rate of ED visits that is 1,675.5 per 100,000, 2.5 times higher than the overall county rate of 661.1 per 100,000 children (Figure 44 on page 94). The African American rate was fully 12 times the Asian/Pacific Islander rate, and about 4 times the Latino and White rates. Similar patterns have been observed statewide, where the rate of ED visits and hospitalizations among African

Map 8: Emergency Department Visits for Asthma, Children 5-17 Years, Alameda County

Notes: Data on ED visits reflect only those that were treated and released. ED patients admitted to the hospital are reflected only in the hospitalization data.
Americans of all ages is 3 times higher than the White rate, suggesting that this is not a localized phenomenon. This dramatic health inequity may be explained in large part by the fact that higher proportions of African Americans live in the poorest, most polluted areas and often lack access to quality housing, health care and other material resources necessary to manage asthma as a chronic condition.

Data to Action: Policy Implications

As the evidence suggests, major inequities exist in Alameda County in the geographic distribution of air pollution and the populations exposed. Economically disadvantaged people, many of whom are people of color, are more likely than wealthy people or White people to live close to busy freeways, ports, and commercial sources of pollution, and their kids are likely to attend schools in more polluted areas as well. In addition, children who live in highly polluted areas experience rates of emergency department visits for asthma 2 to 3 times the rest of the county. It is imperative that government agencies work with business and residential communities to protect residents from exposure to air pollution. Following are some policy goals and recommendations that would address the inequitable distribution of toxic air contaminants and the populations exposed to them.

- Reduce exposure to diesel particulates by eliminating diesel trucks in residential neighborhoods and enforcing the no-idling law near schools.
- Require the use of clean technology in new ships and trucks and reduce emissions in existing fleets by building and leveraging funding sources to ease the transition to clean technologies.
- Ensure successful implementation of state and federal emissions reductions regulations through enforcement and cooperative work agreements across sectors.
- Identify additional means by which port, rail, and other agencies can reduce diesel and other air emissions as quickly and early as possible.
- Study trucking and shipping operations to understand their impact on low-income and vulnerable populations.
- Expand monitoring of air toxins from auto, diesel, and industrial sources to include more locations, i.e., low-income communities and schools close to freeways and ports.
- Conduct health surveys in schools located within 500 feet of major roadways to determine if prevalence of asthma and bronchitis is in excess of that observed in schools without major roadway exposures.
- Make resources available to upgrade heating and ventilation systems in schools, prioritizing those closest to freeways.
- Incorporate public health input in local land use planning and development decisions and weigh air pollution impacts.
- Engage communities in decision-making through meaningful public participation in land use planning and pollution mitigation decisions.
References


7. Pastor M, Sadd J, and Morello-Frosch R. *Still Toxic After All These Years: Air Quality and Environmental Justice in the San Francisco Bay Area*. Center for Justice and Community, University of California, Santa Cruz, February 2007.


**Data Sources**


