

Cumulative Impacts in East Oakland:

Findings from a
community-based
mapping study

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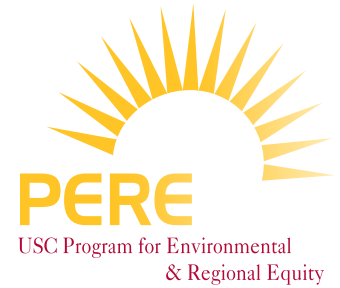
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CBE

The mission of Communities for a Better Environment (CBE) is to achieve environmental health and justice by building grassroots power in and with communities of color and working-class communities. Founded in 1978, CBE combines three major tools to support base building in order to impact social change: in-house community organizing, science-based advocacy, and legal intervention - the triad model. CBE's unique contribution is the integration of the three disciplines into a single organizational strategy to leverage facility-specific pollution prevention and regional policy progress that could not be achieved using organizing, science, or legal advocacy alone. A skilled team of environmental and public interest lawyers, life-long community organizers and environmental researchers work alongside concerned residents of low-income communities of color to implement this strategy. Together, these stakeholders develop comprehensive campaigns to address toxic health hazards in the community.

As a direct result of CBE's efforts, more than 230 industrial facilities have changed their manufacturing, transport or disposal practices, reducing pollution by millions of pounds per year. Thousands of CBE members and supporters live in the Los Angeles Basin and the San Francisco Bay Area. Hundreds of CBE members live in working class communities of color near oil refineries and engage in our work directly.

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Introduction

Environmental Justice (EJ) is rooted in the belief that everyone has the right to a clean and healthy environment where we live, work, go to school, play, and pray regardless of race, gender, or income. Low-income communities and communities of color around the world bear disproportionate burdens, cumulative impacts (the total burden of all emissions and discharges in an area from past and present industrial and domestic activities including social stressors, for example, lack of access to jobs), exposures, and risk from pollution. Research shows

communities of color in the Bay Area, specifically communities characterized by relatively low wealth and income and a large population of immigrants, are most likely to live near places that have poor air quality because of large air toxics releases, and bear the highest health risks due to air toxics in the region relative to other communities.¹ The EJ movement was founded to create social change from the ground up to make healthier communities and a better environment for the benefit of everyone.

The Bay Area Environmental Health Collaborative (BAEHC) defines Cumulative Impacts as the public health and environmental effects from the combined emissions, discharges and exposures in a geographic area, where people live, work, play and learn; this includes pollution from all sources, whether single or multi-media, mobile or stationary, routinely, accidentally or otherwise released.

The Bay Area Environmental Health Collaborative (BAEHC) defines Cumulative Impacts as the public health and environmental effects from the combined emissions, discharges and exposures in a geographic area, where people live, work, play and learn; this includes pollution from all sources, whether single or multi-media, mobile or stationary, routinely, accidentally or otherwise released. The public health and environmental effects that should be considered include effects to sensitive populations, i.e., children and elderly, socioeconomic factors, and other indicators of vulnerability. Currently, laws and regulations of public health risk ignore the overall impact of all such exposures, i.e., the cumulative effect of exposure to multiple pollutants from numerous sources over time even though these are often experienced by environmental justice communities.

Fully appreciating the dynamics of Oakland's rich and diverse history, and the need for environmental improvements in this low-income community of color, in 2007 CBE launched an initiative to engage residents in data gathering in the "Hegenberger Corridor" in East Oakland, Alameda County. The Hegenberger Corridor is a community that is not adequately protected from the harmful effects of the degraded air, water, and soil. The Hegenberger Corridor, an area roughly 1.5 miles by 0.8 miles, situated in the heart of the Elmhurst neighborhood in East Oakland, has a history of industrial pollution. East Oakland is home to the Oakland Coliseum, the 100 year old American Brass & Iron Foundry and numerous other pollution-producing facilities in the remaining industrial lands. Major transportation routes serving the seaport and the Oakland International Airport, traverse this part of East Oakland daily. After World War II, the flight of the white middle-class and discriminatory practices by financial institutions contributed to the disinvestment and disenfranchisement of East Oakland. Furthermore, the community is threatened by the added burden of poor schools, inadequate health care and social services, and employment opportunities largely limited to low-paying stressful jobs.² East Oakland has a rich history of grassroots activism. Churches, traditional religious and

apostolic groups have been active for years in the community. Grassroots organizations, like ACORN and Just Cause Oakland, continue to work on housing justice and gentrification issues. Sobrante Park Neighborhood Collaborative, Elmhurst and Brookfield Neighborhood Associations have been working to clean up contamination and fighting for adequate housing and safe streets for decades.

According to Census 2000 information, 11,349 people live in the Hegenberger Corridor, consisting of 49.1% Latinos, 42.6% African Americans, 3.5% Asian and Pacific Islanders, 2.7% Whites, and 1.5% residents reporting two or more races, 0.3% American Indians, and 0.2% some other race. In East Oakland there are 87,943 residents, consisting of 50% African Americans, 38% Latinos, 6% Asian and Pacific Islanders, 4% Whites, 2% residents reporting two or more races, and less than 1% American Indians.³ In Alameda County, the population is 41% Whites, 21% Asian/Pacific Islanders, 19% Latinos, 15% African Americans, 4% residents reporting two or more races, and less than 1% American Indians.⁴ The household median income is \$23,000-\$39,999,⁵ approximately \$20,000 less per year than the US average for median family income.

The purpose of this project was to conduct a community-level inventory study of stationary and mobile

sources in the Hegenberger Corridor guided by community members with academic partners. This collaborative approach to research for the purpose of combining knowledge with action to bring about social change to improve health outcomes and eliminate health disparities in the research process is called community-based participatory research. Residents working on this project identified and mapped air pollution sources and related health observations. After compiling their findings, they assessed whether any emissions sources they found were omitted from the California Air Resources Board (CARB) emissions inventory of sources near sensitive receptors. This project is a step in fulfilling communities' right to know about toxins in their neighborhoods and beginning to address the cumulative impact of pollution in the community. Following this work, community members will use handheld particulate matter and volatile organic compound monitors to identify local toxic hot spots.

The California Air Resources Board (CARB) inventories fall short for communities that need the most protection from air pollution because of missing information and methods that fail to characterize cumulative impacts to air pollution. The CARB identifies emissions from stationary sources, on-road and off-road mobile sources, area sources, and biogenic sources in their air pollutant emissions inventory database, CEIDARS. However,

because of the methods used to create this inventory, the database may miss emissions sources that contribute to major environmental justice concerns at the community-level. For example, the threshold for being listed in the CEIDARS database is 10 tons per year of air pollution emissions. The CARB emissions inventories do not document smaller emitters, no matter how numerous or densely concentrated in a community. This failing makes CARB's inventories inadequate to serve communities where a significant number of industrial and commercial facilities emit less than the threshold value per year. As a result, the cumulative impact of such facilities is not recognized or mitigated.

This report is organized into three general parts. The first part provides information about some of the air quality issues in East Oakland, including some known sources of pollution and the related health and other impacts on the residents. Then the report goes into how the community-based mapping study was carried out and the hazards and sensitive receptors that were found in the Hegenberger Corridor. The findings are presented in four maps. In the second part, there are conclusions. Lastly, there are recommendations for decision-makers that address the health and environmental disparities in the Hegenberger Corridor.

Air quality in the San Francisco Bay

San Francisco Bay Area Communities of Color and Exposure to Air Toxins

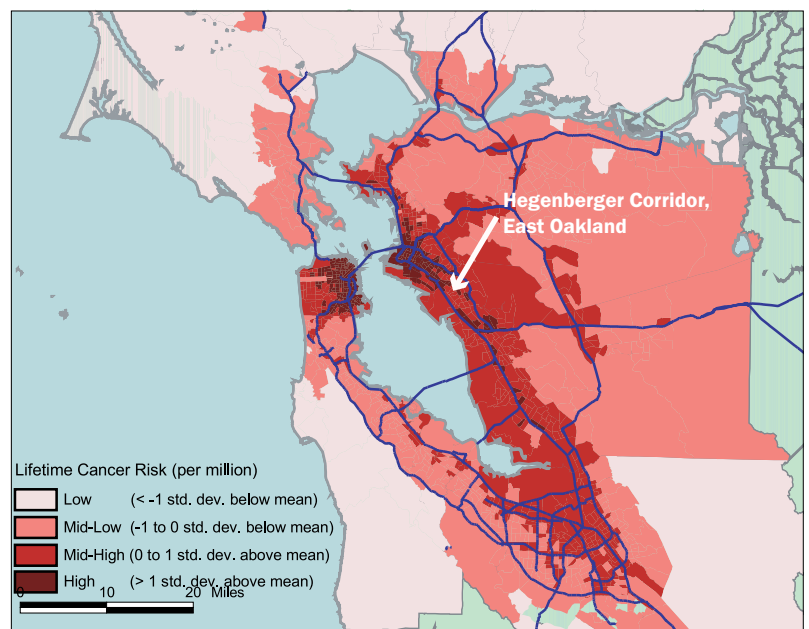
Area and particularly in East Oakland is heavily impaired and negatively affects communities of color. Nationally, the U.S. EPA's Toxic Release Inventory (TRI) for 2003 collects self-reported toxic air emissions data from large stationary industrial facilities. A study by Pastor, Sadd, and Morello-Frosch combining TRI data with Census demographic information shows that in the Bay Area, TRI facilities are concentrated in communities of color, particularly those with higher percentages of African-Americans and Latinos.⁶ There is a cluster of TRI (stationary sources) in East Oakland, particularly in the Hegenberger Corridor in East Oakland, a community of color, where the authors found the resident population is more than 61% people of color.

The study by Pastor, Sadd, and Morello-Frosch also shows that the communities closest to TRI facilities are also characterized by low median per capita income, low homeownership, a high percentage of industrial, commercial and transportation land uses, and are more linguistically isolated (i.e., the Census defines this as a household where no member older than 14 speaks English "very well"). Furthermore, when controlling the socioeconomic factors mentioned previously, African Americans and Latinos still bear a disproportionate burden of pollution. Using the National Air Toxic Assessment (NATA), the investigators also examined estimated cancer risks and respiratory

hazard due to exposure to ambient air pollution from both stationary facilities as well as from mobile sources, which contribute to 70% of the cancer risk in the Bay Area, and found that areas with higher cancer risk and hazards have higher proportions of minority and immigrant residents, have higher poverty rates, have higher percentages of land for industrial, commercial, and transportation land uses, and have lower levels of home ownership.⁷ It is clear that race is intimately related to the burden of pollution. Figure 1 shows that East Oakland is exposed to an air toxics cancer risk that is above the average for the Bay Area.⁸

Poor air quality in the Hegenberger

Figure 1. 1999 National Air Toxics Assessment (NATA) Estimated Cancer Risk (All Sources—mobile and stationary) by 2000 Census Tracts in the nine-County Bay Area



Air Quality in the Hegenberger Corridor

Corridor is attributed to the activities on the freeway, at the Port of Oakland, and at the industrial lands. The Hegenberger Corridor is situated along Interstate 880. Vehicle trips exceed 200,000 trips per day through the Hegenberger Corridor, many of which are heavy diesel engine vehicles. This pollution particularly impacts air quality in the Hegenberger Corridor and also in communities along the Interstate 880 corridor, like West Oakland and San Leandro. I-880 is a main artery of the Port of Oakland (diesel trucks are prohibited on I-580, an alternate route available to other vehicles).

The Port of Oakland, which includes the seaport and the airport, is a regional economic and freight transport hub and a major source of air pollution. The Port of Oakland is the fourth largest container seaport in the U.S., handles 99% of containerized goods moving through Northern California. Oakland International Airport, which emits poorly regulated air toxics from airplanes and pollution from ground transportation, is situated directly west of the Hegenberger Corridor. In the United States, the majority of consumer products purchased in stores today are produced abroad, shipped in a freight container to a port, unloaded by a crane, placed on a truck to carry it to a train, to a distribution center, or directly to the store for purchase.⁹ The complex system of freight transport, ships, cranes, trucks, trains, distribution centers, and airplanes, uses fuels that

pollute the air, and have devastating health impacts in communities nearby. The Pacific American Services/Oakland Foreign Trade Zone #56, an important import/export logistical center and warehousing facility, is located in the Hegenberger Corridor.

The City of Oakland's industrial and commercial activities also have an adverse impact on air quality in East Oakland through the use of chemicals in manufacturing processes and diesel-fueled transportation.¹⁰ Five percent of the total land area of Oakland is in industrial designations under jurisdiction of the City.¹¹ In Old Town National City, a community survey conducted by Environmental Health Coalition staff and community leaders showed that there are over 20 auto-body shops in a six-by-fifteen block low-income neighborhood, that these businesses emit about 70% of the over 23,000 pounds of air toxics emitted in the Old Town neighborhood, and that these toxic air contaminants have been linked to diseases such as asthma, cancer, and reproductive illness.¹²

Diesel Exhaust and Impacts on Health and the Environment

Diesel exhaust, emitted from the trucks, trains, and off-road diesel equipment are a major contributor of toxic air contaminants in East Oakland.¹³ Such exhaust is a mixture of around 450 different chemicals, and can include

nitrous oxides, sulfur oxides, reactive organic gases, and carbon monoxide. Forty of these 450 chemicals are listed as toxic air contaminants by the California Environmental Protection Agency, Air Resources Board.¹⁴ Diesel particulate matter (particulate matter equal to or less than 2.5 and 10 microns) is made up of tiny particles most of which are smaller than the width of human hair and it is especially dangerous to human health.¹⁵

Diesel trucks create health and environmental impacts. Diesel particulate matter is among the most toxic air pollutants. It can be inhaled deep into the lungs and may trigger and contribute to health problems. Diesel exhaust can aggravate allergies and respiratory symptoms, and is linked to asthma and other respiratory diseases, cancer,¹⁶ premature death, heart attacks, and premature birth.¹⁷ Children are at particular risk from air pollution since their lungs are developing and they often play outside, increasing their exposure to diesel exhaust.¹⁸ Rates of asthma hospitalizations among children under five years of age in North, West and East Oakland exceeded the Alameda County average rate by two or more times.¹⁹ The impacts of air pollution from freight transport have medical and social costs in the billions of dollars per year due to hospitalizations, missed workdays and missed school days. The estimated lifetime potential cancer risk from

exposure to diesel particulate matter emissions for West Oakland is about 1,200 excess cancers per million, three times the average background diesel PM ambient concentrations in the Bay Area Air Basin (about 480 per million), with on-road heavy duty trucks attributing to 71% of the potential cancer risk according to the CARB Health Risk Assessment (HRA).^{20 21} It should be noted that the proportion of this total cancer risk (1200 per million) that is attributed by the California Air Resources Board to operations related to the Port of Oakland is almost certainly underestimated. The CARB HRA assumes that trucks going to and from the Port of Oakland exclusively use local freeways rather than local residential streets to get in and out of the area immediately surrounding the Port. Diesel exhaust can end up concentrating in people's homes. Diesel trucks, which often drive illegally through residential streets, also have a visual, noise, and safety impact, affecting quality of life in communities throughout the Bay Area²² (See Figure 2). Idling trucks are contributing sources of air pollution and carbon dioxide, a greenhouse gas contributing to global warming, which have a cumulative impact on the health and wellbeing of residents.

Diesel exhaust impacts not only residents, but also diesel truck drivers as well. Port of Oakland truck drivers are heavily impacted by diesel pollution

that accumulates in the driver cabin and many are exposed for extended periods, often 11 to 14 hour work days. Over half (60%) are earning less than the amount needed to support a family of four above the poverty level in the Bay Area, and have no health insurance.²³

Methods



Figure 2. Carla Pérez talks with a truck driver on Earth Day 2008 about the impacts of diesel exhaust on public health and the importance of minimizing engine idling, particularly in East Oakland.

In fall 2007, East Oakland community leaders, joined CBE staff to conduct the first phase of a community-based study. The study goals were to conduct a community-level inventory study of stationary and mobile sources in the Hegenberger Corridor, to map the sources, and to determine whether any emissions sources found are not recorded in “official” CARB and local air district emissions inventories of sources near sensitive receptors (see Map 1).

The academic partners, Rachel Morello-Frosch and James Sadd, conducted three trainings with CBE staff and Community Leaders.²⁴ At the first training, CBE staff and Community Leaders generated a list of hazards (potential sources of air toxics and criteria air pollutants) and sensitive receptors (residential areas and land uses) to inventory. “Hazards” were identified as stationary businesses known to use or emit hazardous chemicals in their processes and places generating diesel truck traffic²⁵ (See Table 1). “Sensitive Receptors” were identified as places where populations particularly susceptible to disease, specifically children and elderly, congregate and spend a lot of time such as schools and senior centers. Table 1 shows the lists of these categories generated by Community Leaders. At the second and third trainings, participants learned to use iPaq handheld computers equipped with

Table 1. Community-generated lists of categories of Hazards and Sensitive Receptors.	
Hazards: Polluting Sources	Sensitive Receptors: Populations Affected
<ul style="list-style-type: none"> • Large Parking Lots • Recycling Facilities • Grocery Stores (or other magnets for Diesel Trucks) • All Sites with Idling Trucks • Gas Stations • Auto Body Shops • Brownfields • Automobile -Repair and -Related Facilities 	<ul style="list-style-type: none"> • Children’s Centers/Daycare • Senior Centers • Retirement Homes • Playgrounds and Outdoor Recreation Areas • Churches • Healthcare Clinics and Other Facilities • Schools, Head Starts, and Academies

Global Position Systems (GPS) receivers and ArcPad GIS software, a visual tool for documenting place-based pollution sources (See Figure 3 and 4). They also learned data collection methodology, specifically how to record pertinent data and observations.

Study Area

The borders of the Hegenberger Corridor are from north to south, Hegenberger Road to 98th Ave and from east to west, International Blvd. to San Leandro St. These were considered “soft” borders and facilities outside ¼ mile of the borders were not included. Hegenberger Corridor was divided into five areas that were passed through by foot or car. Each area was studied by different pairs of Community Leaders.

Data collection

The name, type of business, address, intersection, category (hazard and sensitive receptor), and other notes about the land use were recorded. All

this information was collected from information that could be attained from signs and observations of what could be seen occurring on the property. CBE Staff and Community Leaders also recorded observations about types of hazards to residents, specifically idling trucks, trucks passing through residential areas, and large containers that may be filled with chemicals. Overlap of data occurred at boundaries of the designated areas; repetitions in data were omitted. After two weeks of data collection, academic partners compiled facility lists, input data into GIS, and created maps.

Our Findings

CBE Staff and Community Leaders identified 216 hazards and 49 sensitive receptors, only some of which are included in CARB’s facility inventories (See Map 2). Table 2 shows the list of Hazards and Sensitive Receptors identified by Community Leaders and CBE staff (See Map 3). Community Leaders identified several gaps in CARB’s inventory that are of high



Figure 3. From left to right: CBE Community Leaders, Gloria Moy, Leslie Bowling, and Wafaa Aborashed of Healthy 880 Communities, and CBE Community Organizer, Nehanda Imara learn to use iPads handheld computers with GPS and GIS.

concern, such as truck idling and automobile repair facilities, gaps in the extent of sensitive receptors, and a lack of health protective services. The list of facilities was organized into more detailed categories.

Community Leaders flagged diesel truck activity and especially diesel truck idling as a major concern due to their connection to health and quality of life impacts. CBE Staff and Community Leaders identified 5 locations of illegal diesel engine idling, and many trucks were identified as Port of Oakland trucks. CARB does not investigate

diesel truck idling in their database even though they have laws on it (See Map 2). In October 2005, CARB strengthened an existing anti-idling regulation applying to all diesel commercial vehicles weighing more than 10,000 pounds (such as delivery trucks, buses, big-rigs, etc.), including sleeper berth trucks, to restrict idling to 5 minutes in California. In this study, diesel trucks have been observed driving through residential areas, near schools, churches and other sensitive receptors, causing traffic and pedestrian safety concerns and as magnets for crime and litter. In addition to being a health issue, idling also costs independent truckers and trucking companies up to \$5,000 in excess diesel costs and more than \$300 a year in maintenance costs.

Community Leaders were also concerned by significant gaps in information on automobile repair businesses collected by CARB and the rules around land use. Community data revealed that there are 68 automobile-related businesses, as opposed to the 9 listed on CARB's database (See Map 4). Community Leaders observed odors, oil spots on paved areas, and other potential environmental harms, the lack of buffering between these businesses and residential areas, and the lack of enforcement of best practices at the businesses. These connections between land use incompatibilities, pollution, and health impacts were apparent to

Table 2. Hazards and Sensitive Receptors Collected by CBE			
Hazards	Number of facilities	Sensitive Receptors	Number of facilities
Auto Repair and Service Facilities	68	Children's Centers and Day cares	15
Car Sales and Car Wash	3		
Logistics (includes trucking companies, warehousing, companies that may have trucking impacts)	27	Churches	14
Grocery Stores with Truck Movement	1		
Manufacturing (includes misc. light industrial uses)	26	Schools, Head Starts, and Academies	7
Manufacturing (metal work)	24	Parks, Playgrounds and Outdoor Recreation Areas, Youth Centers	7
Brownfields (includes unoccupied or vacant parcels known to have a possibly toxic past land use and have not been remediated)	20	Senior Centers, Retirement Homes/ Senior Housing	2
Construction (includes materials sales, construction companies, construction equipment)	15	Healthcare Clinics and other Facilities	1
Gas and Diesel Refilling Stations	12	Community Outreach Center	1
Recycling Facilities	8	Total:	47
Sites with Trucks Illegal Idling	5		
Pest Control	3		
Miscellaneous (type of business is uncertain, but were observed to contribute to negative health or environmental impacts)	3		
Energy Generation	1		
Large Parking Lots	0		
Total:	216		

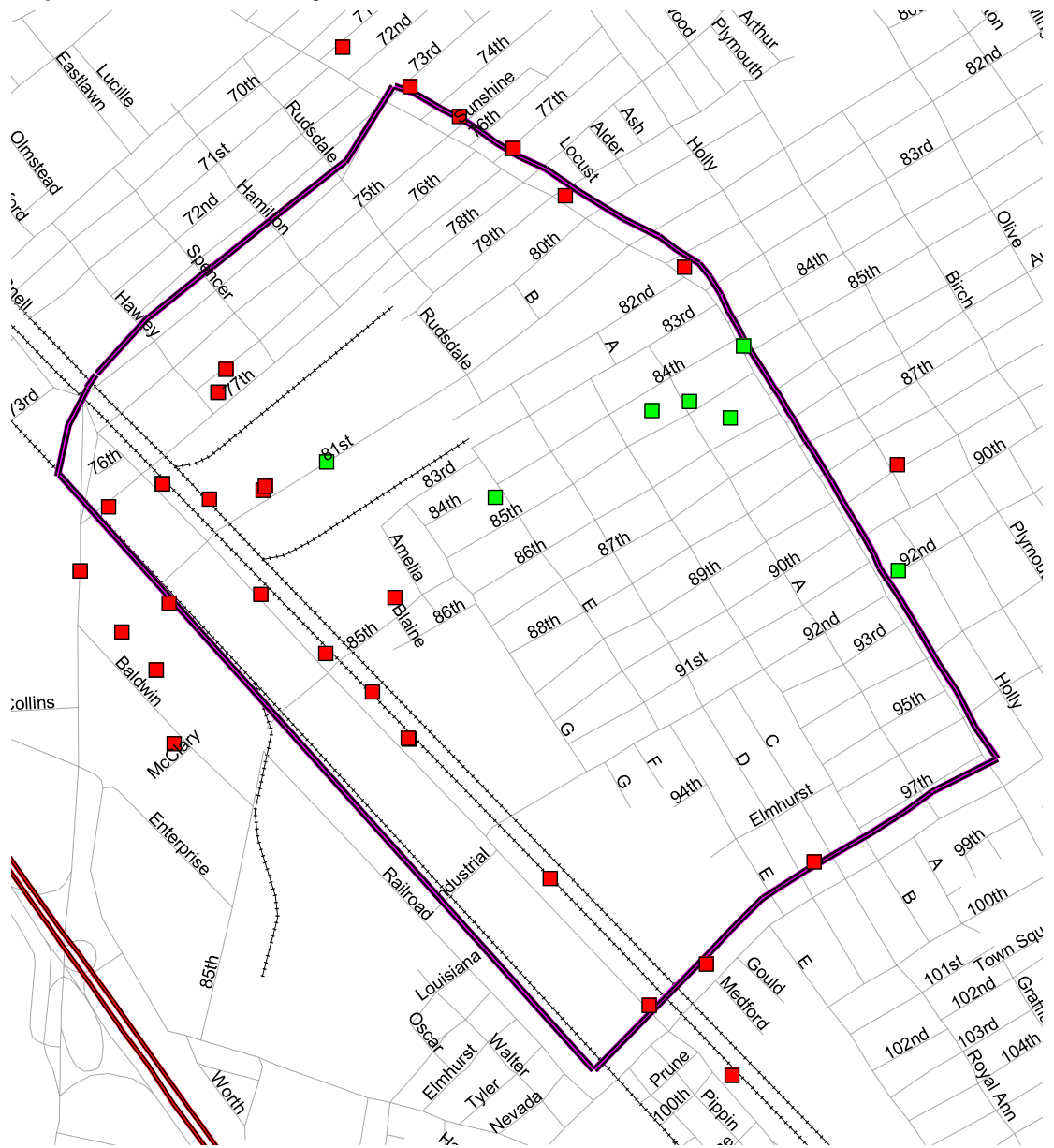
Community Leaders.

Community Leaders were also concerned by an underrepresentation of sensitive receptors and a lack of services in the community (See Map 2). Participants identified 15 childcare facilities compared to 5 recorded in CARB's databases, 14 churches, 7 schools including Head Starts rather than 5 recorded in CARB's databases, 7 parks, recreation/youth centers, 2 senior housing facilities, 1 healthcare facility, and 1 community outreach center.

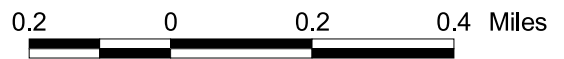
One school in particular is directly downwind from a foundry and residents and teachers have complained about odors during school hours. Community Leaders observed a lack of services in general for the community and particularly a lack of a hospital, health care centers, and asthma clinics. The CARB inventory of sensitive receptors does not include all the categories that the Community Leaders identified.

The CBE mapping study demonstrates existence of a high concentration of

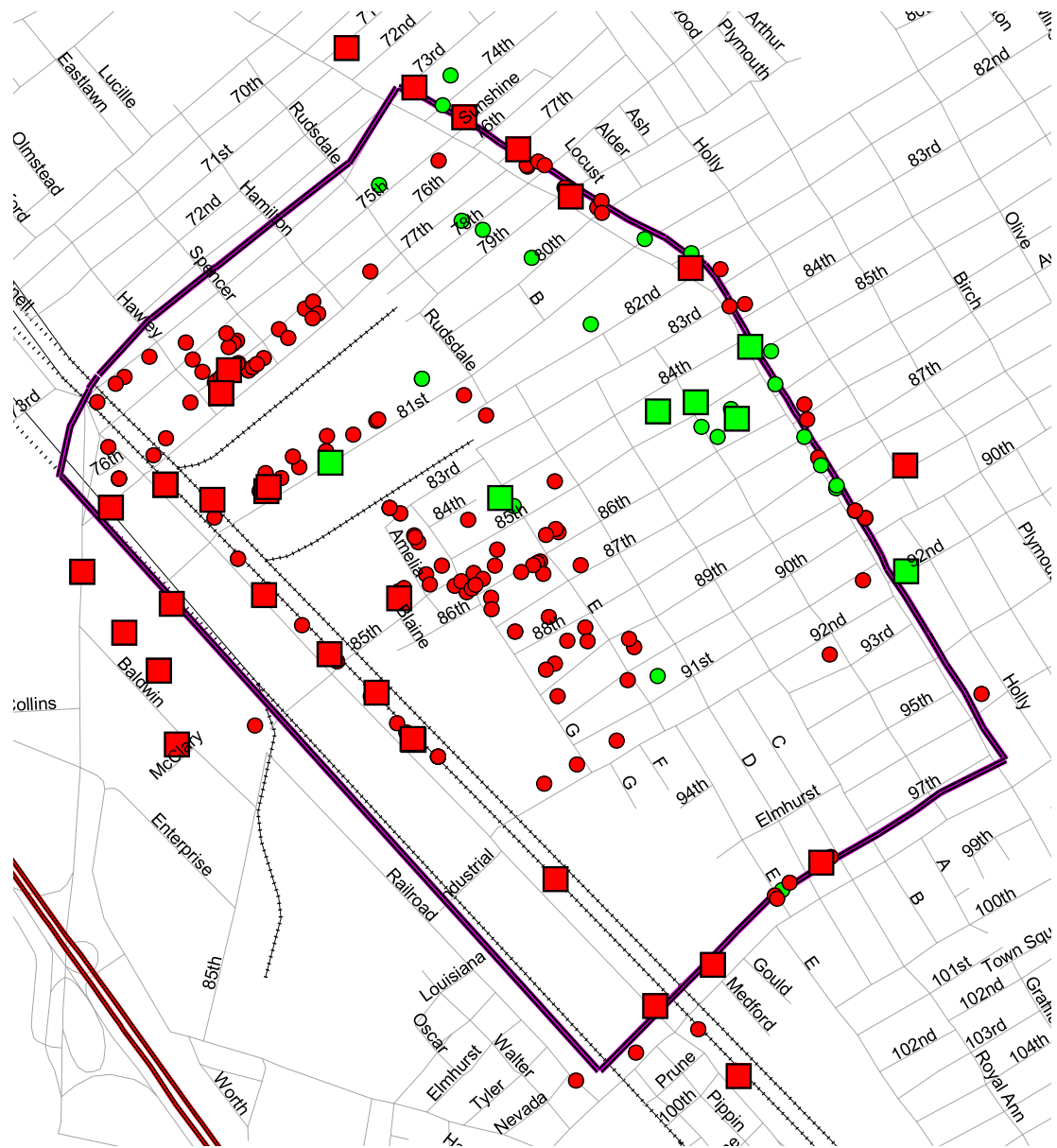
Map 1. This map of the Hegenberger Corridor (outlined in purple) shows hazards (red squares) and sensitive receptors (green squares) listed in CARB’s existing State databases (CHAPIS, AB2588 “Hot Spots”, Department of Toxic Substances Control). Most of the hazards are concentrated along the borders of the Hegenberger Corridor along the north, eastern and western sides and the sensitive receptors are in the south-eastern sides closer to International Boulevard. The double-solid burgundy lines represent the I-880 freeway.



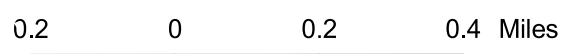
- Sensitive Receptor Locations
- Hazard Locations



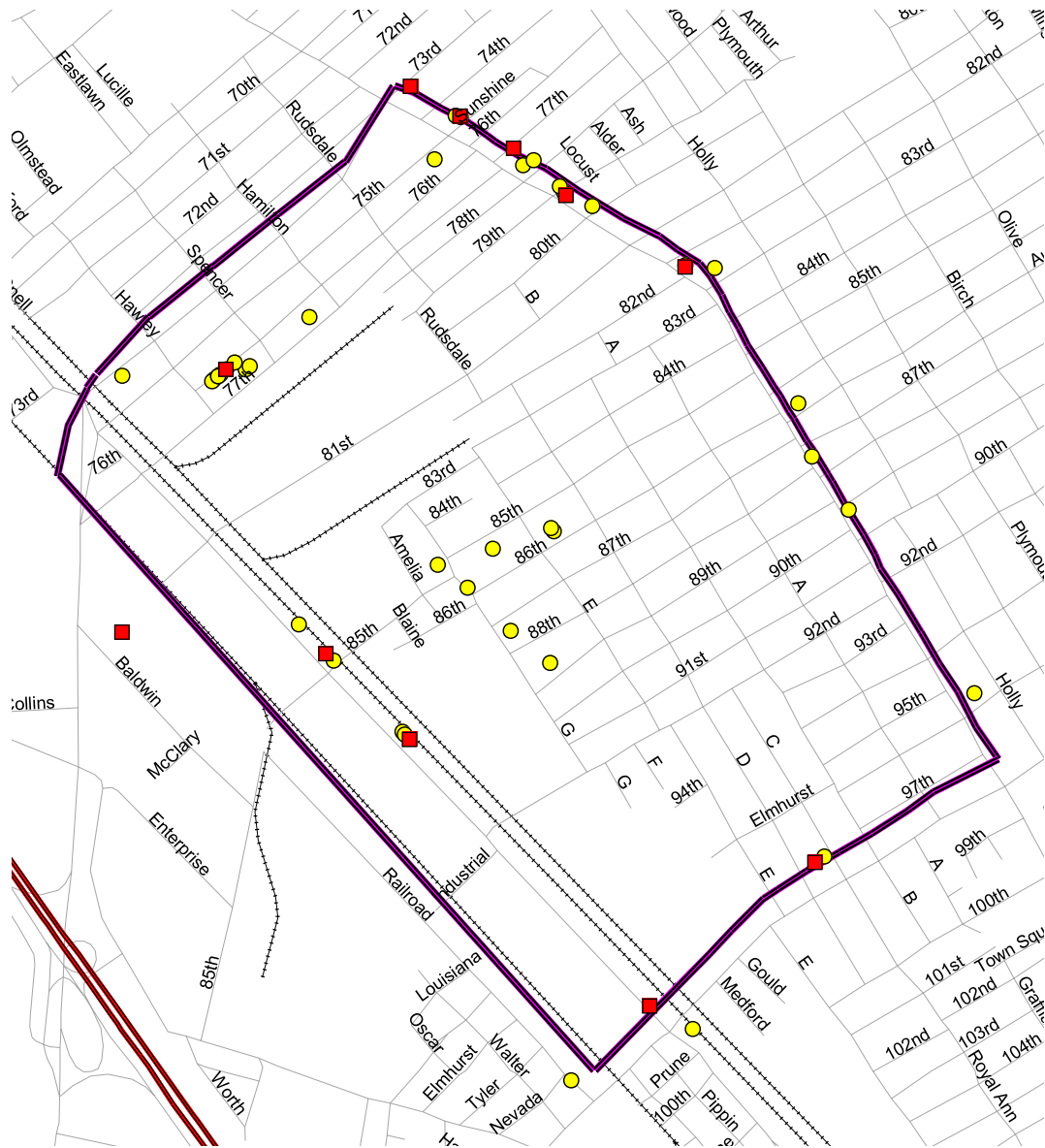
Map 3. This map of the Hegenberger Corridor (outlined in purple) shows hazards (red squares) and sensitive receptors (green squares) listed in CARB's and the additional hazards plus sensitive receptors (green and red circles) in CBE's lists. The number of hazards and sensitive receptors are vastly underestimated by CARB's databases which thus under-represent the impact and concentration of polluting facilities in residential neighborhoods in the Hegenberger Corridor. The double-solid burgundy lines represent the I-880 freeway.



- Sensitive Receptor Locations (ARB)
- Hazard Locations (ARB)
- Additional Sensitive Receptors (this study)
- Additional Hazards (this study)



Map 4. This map of the Hegenberger Corridor (outlined in purple) shows automotive-related facilities (red squares) listed in the AB2588 Hot Spots database, and the automotive repair facilities (yellow circles) in CBE's lists. This map demonstrates the underrepresentation of automotive facilities in CARB's database, which thus underrepresents the impact on the residents in the Hegenberger Corridor. CBE's data shows that these facilities are concentrated on International Boulevard, at 77th Avenue and Hawley, near 86th Avenue and G Street, and on San Leandro Street between 85th and 92nd Avenues. The double-solid burgundy lines represent the I-880 freeway.



- Automotive Facilities (AB2588)
- Additional Automotive Sites (this study)

0.2 0 0.2 0.4 Miles

Conclusions

polluting sources in the Hegenberger Corridor. The study shows that these sources are close to sensitive receptors, and that these activities have known health and quality of life impacts. Additionally, this community-based participatory study shows that existing regulations and CARB's databases can drastically underestimate the cumulative burden of air pollution impacts on some communities. In addition, the close proximity of these hazards to residential areas and sensitive receptors in the Hegenberger Corridor puts in danger community health. The study specifically demonstrates that there are a large number of automobile-related facilities concentrated in the area in close proximity to sensitive receptors.

This mapping study confirms the claim by Community Leaders that the diesel trucks are having a negative impact on residents of the Hegenberger Corridor. Community residents witness many diesel trucks driving through their neighborhoods in East Oakland to serve the businesses adjacent to neighborhoods, they are parking in or in close proximity to residential areas, and they are violating the 5-minute idling law every day. This brings to light a lack of general awareness of impacts of diesel trucks, a need for policy, and a lack of resources, coordination of government agencies and enforcement. This problem around diesel trucks is shared with the West Oakland community. Through years of organizing and raising awareness,

the West Oakland Environmental Indicators Project brought the West Oakland community, City of Oakland staff, businesses, Port of Oakland truckers and other stakeholders together to discuss and compromise on a solution. In 2005, an ordinance was passed to establish a new West Oakland Truck Route, restricting Port trucks from driving through and parking in West Oakland residential areas.²⁶ A similar ordinance should be considered for East Oakland.

In addition to our recommendations related to reducing hazards in the Hegenberger Corridor, we also identified two process recommendations for groups that want to do this type of community-based research. The design of studies should be focused on what is useful and relevant for that community to achieve change and to be able to use the study as a tool. By training residents with science tools, it leaves them with data that they can use to achieve their goals. Second, transparency in the research process is important because a collaborative usually has goals beyond that of the participants. The community was informed of the agenda-setting and was able to give input. By involving the community in the planning and data collection process, it ensured transparency and accountability of academic and research partners, regulatory agencies, and CBOs to the community and was designed in a way that drew on community-based

expertise and on-the-ground experiences.

This research/community collaboration provided an important type of leadership development for community leaders and empowered and engaged them in issues that directly affect their lives. By exposing community leaders to scientific methods and data collection, it demystified science and brought science to the community, making it relevant to their everyday experiences. It also allowed the community leaders to put the scientific methods into practice—formulating questions, using technology, using and interpreting information from tables and maps, and understanding exposure pathways of air toxics. The information from this study changed or articulated the way community leaders think about exposure and strengthened their understanding of their place, exposure, and to the health outcomes they experience. In building knowledge and capacity, the Community Leaders felt empowered by the data to push for environmental policy.

We found that the government and, especially industry, does not adequately inform the community about exposures to chemicals and how they may be affected. Often, industry misinforms the community about emissions and downplays the hazards. The basis for making government and industry accountable for exposures and health impacts experienced by communities



Figure 4. CBE Community Leaders, Myrtle Washington and Maxine Oliver-Benson, learn to use iPaq handheld computers with GPS and GIS.

can be simplified into four reasons:

1. We know what chemicals are coming out of many of these industrial facilities. It is documented, monitored, and in some cases regulated by the government.
2. We know what illnesses and health outcomes are related to these chemicals.
3. We testify consistently about experiencing the illnesses and health outcomes that are known to be related to these chemicals.
4. We know these chemicals are ending up in people's homes.

In the policy setting, the data from this type of study supports the claims, experiences and demands that community members bring to decision-makers and the process develops strong community health advocates. Decision-makers traditionally accept and respond to scientific data presented by recognized and respected researchers from highly renowned academic institutions across the country. However, community members' experiences are often viewed as less valid. Studies such as this one put the claims that community members consistently make into a language that decision-makers want to hear. Additionally, community-based studies such as this one ground our scientific findings in community members' actual experiences, contributing to policy recommendations more relevant and responsive to community members' needs.

This information makes a compelling case and the leverage a community needs for advocating for cumulative impact policy. The city of Cincinnati, Ohio may be the first in the country to pass a law that requires an environmental justice review that would determine whether a proposed project would have a cumulative adverse impact on the health and the environment of an EJ community.²⁷ Although this ordinance excludes residences, retail and commercial projects, it sets a precedent for a

cumulative impact policy at the city level. The CBE mapping study brings evidence that a high concentration of polluting sources in the Hegenberger Corridor exists, that these sources are too close to sensitive receptors, and these activities have known health and quality of life impacts. The entire area needs to have a moratorium on new pollution sources.

Using the compelling information revealed in this study as leverage, CBE members are now developing a campaign platform and initiative called, "Freedom to Breathe." The goal is to improve community health and quality of life in the Hegenberger Corridor through addressing poor air quality and exposure to toxics. Achieving this goal is dependent on reducing diesel exhaust in the community, increasing buffers between pollution sources and residential areas, ensuring the community is not burdened with new pollution, and securing more economic and health benefits for the community that can serve to mitigate poor environmental conditions. CBE members will continue the next phase of this project in fall 2008 with hand-held monitoring of fine particulates and following that with using small, stationary monitors to monitor fine particulates for a longer period of time at certain areas with high measurements of particulates.

Cumulative Impacts

CBE's Policy Recommendations

- CARB, Bay Area Air Quality Management District (BAAQMD), and City of Oakland should, at a minimum, adopt a policy to have no net increase in air pollution in East Oakland. Air pollution reduction is already a goal of statewide efforts such as AB 32 and Prop 1B. This would also be a step towards addressing environmental health and justice issues in East Oakland if efforts focused on local impacts.
- BAAQMD and CARB should adopt cumulative impact policies with communities “at the table”. In particular, they should adopt the policy recommendations proposed by the Bay Area Environmental Health Collaborative (BAEHC):
 - Revise health risk evaluation procedures to include consideration of cumulative impact criteria;
 - Adopt enforceable measures to reduce cumulative air pollution, particularly in communities heavily burdened by pollution exposures, and;
 - Improve public access to information and public participation in air quality decision-making.
- CARB and Air Quality Management Districts should conduct community-driven, on-the-ground investigations statewide and dedicate more resources to expanding its databases. CARB needs to expand its lists of hazards and sensitive receptors to more accurately determine the cumulative impact on communities of exposure to multiple pollution sources and to protect communities from disproportionate impacts of air pollution.

Planning and Zoning

- The City of Oakland should modify the Planning and Zoning Codes to:
 - Increase and enforce buffers, also referred to as pollution buffers, between industrial and residential zones in order to prevent land use conflicts and protect public health.
 - Make a plan to relocate the automobile repair and related facilities to vacant properties on San Leandro Street in order to reduce the occurrence of incompatible land uses, yet protect small businesses operating in East Oakland.

Air Pollution Monitoring

Economic Development



Figure 5. Myrtle Washington prioritizes redevelopment issues for CBE campaign work at a community meeting.

the environmental and health impacts to the surrounding neighborhood should be mitigated. Furthermore, the City should adopt local hire and livable wage policies with adequate monitoring before and after project commencement to ensure equity for Oaklanders;

- Develop criteria through a multi-stakeholder consensus building process for an environmental justice review for new development proposals, (See Figure 5);

- The City of Oakland should incorporate principles around just and sustainable economic development that considers environmental health and justice from the Oakland NetWork for Responsible Development and create policies to promote these principles:
 - Retain industrial lands in Oakland as part of a goal for producing jobs for Oaklanders. One concern is that these jobs should be safe and as non-polluting as possible for workers and that
 - Adopt building and “green” industry standards to increase energy efficiency, resource conservation, and clean alternative energy sources to ensure all businesses reduce air pollution and greenhouse gases, while promoting a sustainable economy, and;
 - Utilize community benefits agreements and have community members at the table early in the land use decision-making process in East Oakland to ensure the community gets the social resources and environmental

mitigations it needs.

Diesel Trucks in East Oakland

- The Port of Oakland should adopt a comprehensive Clean Trucks Program to ensure that it is feasible for independent Port truck drivers to scrap or retrofit older dirty diesel trucks, improve their working conditions, ensure truck routes and parking outside of residential neighborhoods, and minimize diesel engine idling. CBE is helping to do this within the Coalition for Clean and Safe Ports.
- Reduce the impacts of diesel trucks in East Oakland.
 - CARB, BAAQMD, and the City of Oakland's Police Department (OPD) should enforce the California 5-minute idling law. In addition to working towards making enforcement a higher priority for the City, CBE has initiated outreach to truckers and residents to raise awareness of the California 5-minute idling law. At our first Anti-Idling Day of Action with the Ditching Dirty Diesel Collaborative, Coalition for Clean and

Safe Ports, East Bay Alliance for a Sustainable Economy, Healthy San Leandro, and Merritt College Students on Earth Day 2008, we reached out to 45 truckers.²⁸

- Establish a truck route that reduces or eliminates trucks driving through and parking in residential areas. This route should be identified through a multi-stakeholder participation process throughout the I-880 corridor.

Endnotes

¹ Pastor, Manuel; Sadd, James; Morello-Frosch, Rachel. February 2007. *Still Toxic After All These Years: Air Quality and Environmental Justice in the San Francisco Bay Area*. 24pp. A copy of the report may be downloaded at: <http://cjtc.ucsc.edu>.

² For more history of East Oakland, see CBE's Summer 2008 newsletter.

³ Alameda County Public Health Department. 2001. *East Oakland Community Information Book*.

⁴ Alameda County Public Health Department. 2001. *East Oakland Community Information Book*. Of the Asian and Pacific Islanders, approximately 20% are Native Hawaiians and other Pacific Islanders, and 80% are Asians.

⁵ Oakland Fund for Children and Youth. *Oakland Maps: Interpretation of Trends and Gaps For the Oakland Fund for Children and Youth*.

⁶ Pastor, Manuel; Sadd, James; Morello-Frosch, Rachel. February 2007. *Still Toxic After All These Years: Air Quality and Environmental Justice in the San Francisco Bay Area*. 24pp. A copy of the report may be downloaded at: <http://cjtc.ucsc.edu>.

⁷ Pastor, Manuel; Sadd, James; Morello-Frosch, Rachel. February 2007. *Still Toxic After All These Years: Air Quality and Environmental Justice in the San Francisco Bay Area*. 24pp. A copy of the report may be downloaded at: <http://cjtc.ucsc.edu>.

⁸ Pastor, Manuel; Sadd, James; Morello-Frosch, Rachel. February 2007. *Still Toxic After All These Years: Air Quality and Environmental Justice in the San Francisco Bay Area*. 24pp. A copy of the report may be downloaded at: <http://cjtc.ucsc.edu>.

⁹ Pacific Institute. November 2006. *Paying*

With Our Health: The Real Cost of Freight Transport in California.

¹⁰ While industrial and commercial activities may have an adverse impact on air quality, CBE realizes that these businesses also have the potential to create high-paying jobs. CBE is advocating for responsible and sustainable development in Oakland to improve the health of the environment for all people without sacrificing access to basic needs like jobs with livable wages.

¹¹ City of Oakland Community and Economic Development Agency. February 19, 2008. *City of Oakland City Council Agenda Report Re: Report and Recommendations Adopting a Motion Establishing a City-wide Industrial Land Use Policy*. 60 pp. (p. 3).

¹² Environmental Health Coalition. August 2005. *Reclaiming Old Town National City: A Community Survey*.

¹³ The California Air Resource Board identifies Particulate Emissions from Diesel-Fueled Engines as a Toxic Air Contaminant. The identification list may be found at : <http://www.arb.ca.gov/toxics/id/taclist.htm>.

¹⁴ California Environmental Protection Agency, California Air Resources Board and the Office of Environmental Health Hazard Assessment. April/May 1998. *Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant*. The substances in diesel exhaust listed by the CARB as toxic air contaminants are: acetaldehyde, acrolein, aniline, antimony compounds, arsenic, benzene, beryllium compounds, biphenyl, bis[2-ethylhexyl]phthalate, 1,3-butadiene, cadmium, chlorine, chlorobenzene, chromium compounds, cobalt compounds, cresol isomers, cyanide compounds, dioxins and dibenzofurans, dibutylphthalate, ethyl benzene, formaldehyde, hexane, inorganic lead, manganese compounds, mercury compounds, methanol, methyl ethyl

ketone, naphthalene, nickel, 4-nitrobiphenyl, phenol, phosphorus, POM, including PAHs and their derivatives, propionaldehyde, selenium compounds, styrene, toluene, xylene isomers and mixtures, o-xylenes, m-xylenes, and p-xylenes.

¹⁵ Wargo, J; Wargo, L; Alderman, N. 2006. *The Harmful Effects of Vehicle Exhaust: A Case for Policy Change*. Environment & Human Health, Inc. 64pp.

¹⁶ California Environmental Protection Agency, California Air Resources Board and the Office of Environmental Health Hazard Assessment. April/May 1998. *Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant*.

¹⁷ U.S. EPA. *Health assessment document for diesel engine exhaust*. May 2002. National Center for Environmental Assessment - Office of Research and Development. Washington, DC. EPA/600/8-90/057F. Available from <http://www.epa.gov/ncea/iris>.

¹⁸ Pacific Institute. November 2006. *Paying With Our Health: The Real Cost of Freight Transport in California*.

¹⁹ Alameda County Public Health Department. 2006. *Alameda County Health Status Report*.

²⁰ California Air Resources Board. March 2008. *Diesel Particulate Matter Health Risk Assessment for the West Oakland Community: Preliminary Summary of Results*. <http://www.arb.ca.gov/ch/communities/ra/westoakland/westoakland.htm>

²¹ Fernandez, E. March 20, 2008. *Study says diesel emissions raise cancer risk*. San Francisco Chronicle.

²² Pacific Institute. November 2006. *Paying With Our Health: The Real Cost of Freight Transport in California*.

²³ East Bay Alliance for a Sustainable Economy.

September 2007. *Taking the Low Road: How Independent Contracting at the Port Endangers Public Health, Truck Drivers, and Economic Growth*. 56 pp.

²⁴ The academic partners are Rachel Morello-Frosch, University of Berkeley; Manuel Pastor, University of Southern California; Jim Sadd, Occidental College. The Community Leaders are: Wafaa Aborashed, Healthy San Leandro Collaborative, Leslie Bowling, Jacquee Castain, Glenda Deloney, Gloria Moy, Maxine Oliver-Benson, Myrtle Washington.

²⁵ In Table 1 listed under hazards are Grocery Stores. Although grocery stores that have healthy foods serve basic needs and are assets to the community, they may also be magnets for diesel-engine trucks and so would be considered a hazard to the residents. Brownfields is also listed as a hazard because contaminated soil could be inhaled or ingested if it is blown into the air and if children are playing in it.

²⁶ City of Oakland Public Works Committee Agenda Report. July 12, 2005. *Re: Ordinance Amending Sections 10.52.070 and 10.52.120 of the Oakland Municipal Code to Modify Existing Local and Through Truck Routes in West Oakland*.

²⁷ Accessed on 05/20/2008 <http://news.enquirer.com/apps/pbcs.dll/article?AID=/20080428/NEWS01/304280140/1056/COL02>

²⁸ For news coverage, go to: <http://www.ktvu.com/video/15962129/index.html> and the last 2 minutes of the program at: <http://kpfa.org/archives/index.php?arch=25941>



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