Deluged by Diesel:
Healthy Solutions for West County

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PACIFIC INSTITUTE

West County Toxics Coalition

Deluged by Diesel: Healthy Solutions for West County

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Executive Summary

Hugging the San Francisco Bay, in the shadow of a major oil refinery, and surrounded by industry, freeways, and rail yards, sits the community of Inner West Contra Costa County. As this report will show, the residents of this area (which we will call Inner West County for the sake of simplicity) are exposed to far more than their fair share of pollution. However, the good news is that there is a wide range of practical solutions that can cut the amount of pollution in the air and protect families without harming the economy.

This report focuses on reducing diesel air pollution, which poses the greatest cancer risk to California residents.[1] According to the most up-to-date research, diesel pollution is linked to cancer, heart disease, premature death, and other health problems.[2] Other research shows that diesel soot can trigger and may even cause asthma.[3]

Sources of diesel pollution in the area include trucks, trains, ships, buses, and construction equipment. Unlike industrial complexes that have a massive presence on a community's landscape, the burden of diesel pollution is harder to track. There isn't a single, fixed smokestack emitting pollution, but thousands of smaller, mobile smokestacks – the exhaust pipes on trucks, buses, and other diesel equipment. And, these sources of pollution are often closer to people than other industrial facilities, posing a greater risk to residents.

All together, mobile sources of pollution in Contra Costa County are responsible for over 90 percent of the additional cancer risk due to air pollution. Most of this additional risk is from exposure to diesel pollution and especially the tiny particles known as "diesel particulate matter."[4]

While diesel pollution is a concern everywhere, we often see diesel pollution concentrated in predominantly low-income communities and communities of color like Inner West County. Our research finds that more diesel pollution is emitted in Inner West County per square mile than the average for the Bay Area and California. We also find that there are a host of solutions that can be implemented right away to reduce this pollution and protect the health of residents.

Summary of Findings

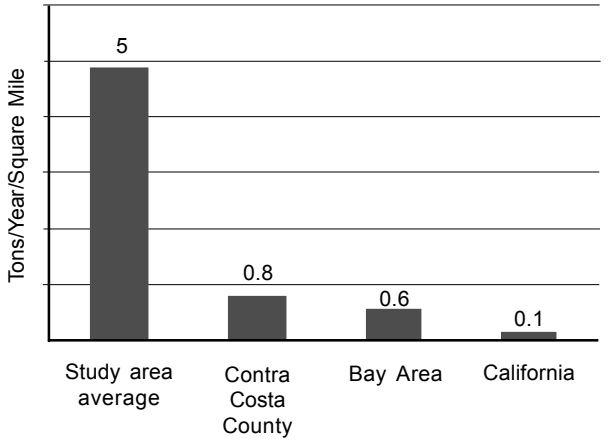
Over the last year, a coalition of organizations including Neighborhood House of North Richmond, the Community Health Initiative, the Pacific Institute, West County Toxics Coalition, and Contra Costa Health Services came together to assess the extent of diesel pollution in Inner West County, the sources of diesel pollution, and to identify solutions to reduce this pollution. Through this research, we found that:

1) Average diesel emissions in Inner West County are 40 times higher per area than the California average.[5] There is 6 times more diesel pollution released per square mile in Inner West County than in the County as a whole, and 40 times more than in California. Per person, there is two times more diesel pollution released in Inner West County than the County average. Accounting only for the area that is considered urban, there is 3 times more diesel pollution released per square mile of urbanized area in Inner West County than the County and State average.

2) Monitored Inner West County homes have an average of 4 times the level of soot compared to a home in another part of the County.[6] An indoor air study of three Inner West County homes found that weekday levels of black soot were on average 4 times higher than a home in Lafayette, which is also in Contra Costa County, but is further away from sources of diesel pollution. A sizeable portion of this soot is from diesel pollution.

3) There is a wide range of practical solutions that can reduce exposure to diesel pollution without harming the economy. The proposed solutions in this report were developed by community members and range from short-term and easy to implement to longer-term approaches. Solutions include developing a regional truck route, getting cleaner trucks on the road, and reducing pollution at rail yards and ports. Changes to local, state and federal regulations are also needed as we discuss in the solutions section starting on page 8.

Diesel Particulate Matter Per Square Mile



As the graph to the left shows, there is 6 times more diesel particulate matter pollution released per square mile in Inner West County than in the County as a whole, and 40 times more than in California as a whole. These tiny particles, given off by burning diesel, are a major source of toxic air pollution.

Deluged by Diesel

Residents and organizations in Inner West County have been organizing for many years to address issues of poor air quality and associated health risks. This report is a response to many concerns identified in an Air Pollution Town Hall meeting held in November 2003 and hosted by the Community Health Initiative's Air Monitors, Neighborhood House of North Richmond, West County Toxics Coalition, Contra Costa Health Services, and the Pacific Institute.

The goal of the meeting was to help residents craft solutions to the area's dirty air. Initial research to prepare for the discussion revealed that over 90 percent of all hazardous air pollution in the area was from mobile sources.[7] This led to further research identifying diesel pollution from trucks, trains, ships, and construction equipment as a primary source of toxic air pollution.

At the same time, West County Asthma Advocates, another group of trained West County community residents, was learning more about the links between diesel pollution and asthma, and hosted an "Asthma and Diesel" workshop. These two efforts coalesced in the creation of a West County Asthma and Diesel Committee, which brought together government agencies and community-based organizations to address diesel pollution in the community and to identify ways to reduce its health impacts.

A Matter of Fairness: Diesel Pollution in Inner West County

Why does diesel hit this particular area so hard? Inner West County is surrounded by highways and is home to two rail yards and the Port of Richmond, a large bulk materials port. Diesel is the primary fuel used in moving goods in the United States, powering trucks, trains, ships, and construction equipment. Because of where rail yards, freeways, and distribution centers are located, diesel pollution often severely and unfairly impacts low-income and communities of color. Inner West County is one such community.

Inner West County is predominantly a community of color; 85 percent of those who live in the area are people of color.[8] It's also a low-income community with half the per capita income of the County as a whole.[9] This area also has a higher proportion of people living below the poverty line and more non-English speaking households than the Contra Costa County average. Health outcomes in Inner West County also reflect disparities compared to the County as a whole. For example, asthma hospitalization rates in this region are nearly twice the County average.[10]

The very communities that are impacted by diesel pollution often have poor access to quality health care and little political power to address the issue. The serious health effects of diesel pollution are well known. Hundreds of studies have demonstrated the link between diesel pollution and lung cancer, asthma, premature death, and most recently heart disease. With asthma a serious threat in the area, numerous health organizations are beginning to assess the role that diesel pollution may play in contributing to this epidemic.

"I have a young granddaughter who suffers from asthma. The study let me know that there's quite a lot of diesel soot in the house — more than I expected. Now that I know, I'm going to put an air filter in her room." - *Lee Jones, North Richmond Resident*

Why is Diesel Pollution a Health Concern?

Diesel exhaust is a mixture of gases and particles that can sometimes be seen coming out of the tailpipes of diesel vehicles. According to the State of California, there are 40 toxic components in diesel exhaust including formaldehyde, benzene, acrolein, and diesel particulate matter.[11] These toxic air contaminants are dangerous to health even at extremely low levels, and there is no level at which these pollutants are considered safe.

Diesel particulate matter (DPM) – microscopic particles produced by combustion — is among the most toxic substances in diesel exhaust. Sometimes diesel particles can be seen as black smoke coming out of diesel vehicles, but most of the time the particles are so small they cannot be seen by the naked eye. Most diesel particulate matter, about 80 to 95 percent, is less than 1 micron in size or about 1/100 of the width of a human hair.[12] Many other toxic substances emitted in diesel exhaust can also attach onto diesel particles. Because diesel particulate matter is so small, it can carry these toxic substances deep into the lungs and directly into the bloodstream.[13]

Of all kinds of air pollution, the State of California has found that diesel exhaust poses the greatest cancer risk. The South Coast Air Quality Management District estimates that 70 percent of all airborne cancer risk comes from breathing diesel exhaust.[14] This increased cancer risk from diesel particulate matter could cause premature deaths for 14,000 Californians exposed over a lifetime.[15] Short-term exposure to diesel exhaust can irritate the eyes, nose, throat, and lungs, and can trigger an asthma attack and exacerbate asthma symptoms. [16] Recent studies have also found that diesel pollution can worsen heart disease.[17]

Our Research Findings

Our findings have confirmed what residents of Inner West County have long suspected: Residents face far more than their fair share of diesel pollution. We measured a component of diesel pollution in four separate houses and we also conducted an inventory of likely sources of diesel exhaust. Then, working closely with the community, we facilitated a series of meetings to create a set of workable solutions.

Our indoor air study found that the residents of three homes in Inner West County are exposed, on average, to 4 times higher levels of black soot on weekdays than residents of a home in a less industrial area of the County (more details are below).[18]

We also found that residents face a wide range of air pollution from trucks, ships, trains, and other diesel equipment. A full technical report describing the details, methods, and limits of our study is online at: www.pacinst.org/reports/west_county_diesel

Sources of Diesel Pollution in Inner West County

In order to determine opportunities to reduce diesel pollution, residents and researchers wanted to know what the major sources of diesel pollution are in the community. To answer this question, the Pacific Institute prepared an emissions inventory that identified the primary sources and estimated the amount of diesel pollution released from each source. We reviewed over a dozen Environmental Impact Reports and previous studies to estimate the amount of diesel pollution from ships, trains, trucks, and construction equipment in Inner West County.[19]

Trucks: *Diesel pollution from heavy-duty trucks, like this one photographed on the Richmond Parkway near I-580, makes up 10% of the diesel pollution in Innner West County.*

According to our review, we estimate that over 90 tons of diesel pollution is released in Inner West County every year. The primary sources of diesel pollution in the area are trucks, trains, ships, and off-road vehicles like construction equipment.

Trucks: Diesel trucks travel through Inner West County on several major thoroughfares including the Richmond Parkway, I-80, and I-580. There are up to 7,000 trucks that travel on the highways around Inner West County every day.[20] There are also numerous facilities, from rail yards to industrial operations, that generate truck trips in Inner West County. Six of the largest facilities are located in West Contra Costa County and generate over 4,000 truck trips per day. Residents report that trucks

also travel on residential streets, sometimes illegally, to get to and from the Richmond Parkway. Since the City of San Pablo restricted truck traffic on certain city streets, many trucks have been forced to travel through North Richmond and other areas to get to the Richmond Parkway, which connects two of the interstate highways in the area.

Trains: Another major source of diesel pollution in the area is trains. This includes freight and passenger trains, as they travel or idle in Inner West County, and also yard trains and equipment at rail yards. Three railroad companies operate in Inner West County: Union Pacific, Burlington Northern Santa Fe, and Richmond Pacific. There are two rail yards in the area, and about 15 miles of train tracks, much of which abuts residential areas where residents have complained about prolonged idling of locomotives.[21]

Ships: Approximately 5,000 ships travel to and from the Port of Richmond every year.[22] Every year, these ships produce an estimated 60 tons of diesel particulate matter. Ships account, according to our estimates, for about 60 percent of all diesel pollution released in Inner West County.[23] While ships are potentially the largest single source of diesel pollution, the Port of Richmond is not directly adjacent to residential areas so this source is not as visible to community residents as other sources. Also, because marine vessel pollution is released further from residential communities, by the time this pollution reaches residents it may have fallen to the ground or mixed with other air, making it less concentrated.

Construction Equipment: Construction equipment is a significant source of diesel pollution in Inner West County as it is in many urbanized areas. Because we were not able to identify how much construction was taking place in Inner West County versus the County as a whole, we assumed in our estimates that construction was evenly distributed throughout Contra Costa County.

Details of the Indoor Air Monitoring Study

To understand how diesel pollution was affecting residents, we looked at air pollution level data from a variety of sources.

There are three active air-quality monitoring stations operated by the Bay Area Air Quality Management District and the California Air Resources Board in Inner West County.[24] Of these, only one monitoring station measures particulate matter that is 10 microns (PM 10) or smaller. The location of this station has been changed three times from 1993 to 2003, making it difficult to assess changes in pollution levels over time. There were also three years for which no data exist at all because no monitoring of particulate matter was conducted.

There is no monitoring for particulate matter less than 2.5 microns (PM 2.5) at any station in Inner West County. PM 2.5 is a better approximation of particles caused by fuel combustion, as opposed to road dust and other less toxic particles. It is critical that agencies remedy this lack of data with the installation of appropriate monitoring devices in Inner West County.

To address this serious lack of data, residents and West County organizations decided to work with the Pacific Institute to undertake a limited indoor air monitoring study of soot in their homes.

With the help of funding from the United States Environmental Protection Agency and donated equipment from the Natural Resources Defense Council, a study of indoor air was conducted in the homes of three residents in Inner West County, and one home in another part of Contra Costa County.

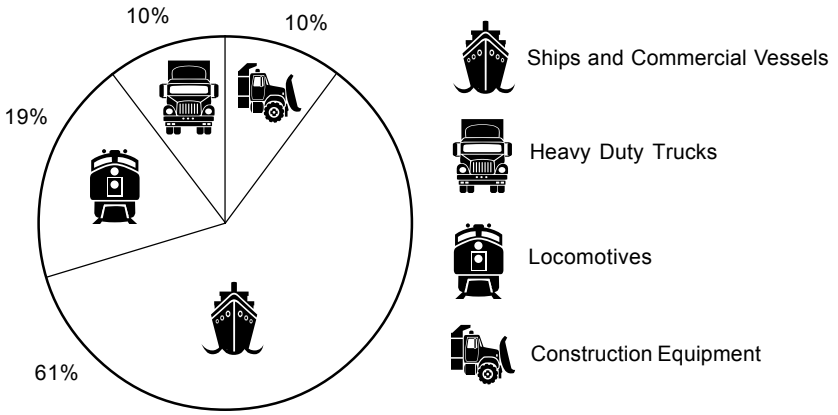
A device called an Aethalometer was used to measure black soot in the air. Black soot is a chemical compound present in diesel particulate matter and often used as a representative compound for diesel particulate matter.

Each home was monitored for 5 days in March and April. The three Inner West County homes were located in North Richmond, Parchester Village, and San Pablo. The home outside of Inner West County was in Lafayette, another city in Contra Costa County that is removed from major sources of diesel pollution.

Table 1: Major Sources of Diesel Pollution in W. County

Type	*Frequency*	*Major Sources*	*Est. tons of DPM/year*	*Est. Proximity to residences*
Ships	• 5,000 ships per year	• Port of Richmond	60	< 1 mile
Trains	• About 15 mi. of rail tracks • Two rail yards	• Burlington Northern Santa Fe tracks and yard • Union Pacific tracks • Richmond Pacific tracks and yard	20	< 50 feet
Heavy-duty trucks	• ~ 7,100 daily truck trips generated in study area • ~ 6,800 daily truck trips on surrounding highways (I-580, I-80)	• Richmond Parkway • I-580 and I-80 • Burlington Northern Santa Fe, UPS, Golden Gate Petroleum, W. Contra Costa Sanitary Landfill, Levin-Richmond Terminal, USPS	10	< 50 feet
Construction equip.	N/A	• Residential and commercial development	10	< 50 feet

Sources of Diesel Pollution



On average, 4 times higher levels of black soot were found on weekdays in the air in Inner West County homes than in the control home.[25] While Inner West County homes had almost double the levels of black soot on a weekday compared to Sunday, the control home had very little difference from weekday to Sunday. Since truck activity occurs primarily on weekdays, this discrepancy lends weight to our findings that truck traffic is a significant source of diesel pollution impacting homes.

Proposed Solutions

After the initial study was completed, community residents came together to learn about the study results and discuss potential solutions to clean up the air. Project partners hosted a community-wide meeting on April 27, 2005 to discuss the initial results and receive community input on potential solutions. Follow-up meetings continued to refine the list of proposed solutions.

"When you're driving on the Parkway, you notice the diesel pollution the most. It really burns my eyes and I start coughing."
- Patricia Overton, Parchester Village Resident

Our research findings show that diesel pollution is concentrated in Inner West County, that it is a serious health concern, and that residents are already suffering the health and quality of life impacts from poor air quality. The good news is that through a community brainstorming process and discussions with regional agencies, a number of solutions are being proposed that can reduce diesel pollution and its impacts in Inner West County.

While this list does not include all the available options, it represents the community's best ideas. The solutions include different approaches, but they all focus on practical ways to reduce diesel pollution and protect human health.

Goal: Reduce emissions of diesel pollution

Recommendation: Regulate diesel pollution at rail yards and ports

Rail yards and ports create huge amounts of pollution, but unlike other stationary sources like factories, they are not currently required to reduce or even track these emissions. And because ships use the dirtiest kind of diesel fuel, pollution from ports is often much worse than comparable industrial facilities.

Elected officials and agencies should develop legislation and rules to reduce pollution at rail yards and ports. This includes reducing operating emissions from switching locomotives, ships, and cargo handling equipment. Several communities in California and the U.S. have successfully reduced pollution via improved railroad and port regulation. The experience of these communities should be used to develop model legislation and campaign strategies for Inner West County.

Recommendation: Reduce pollution from rail yards and sidings

There are many practical steps that rail companies can put into place right away to reduce pollution without waiting for new regulations. Significant emission reductions can be obtained by repowering, retrofitting, or replacing locomotives and equipment as it ages. Other solutions include installing idling control technology and establishing clear idling limits for all equipment types. California's 5-minute truck idling limit law is a good model. Many residents report occasions when rail engines have idled for extended periods — sometimes for many days. Rail companies should provide a method for residents to report idling in excess of a predetermined limit.

Recommendation: Reduce pollution from the Port of Richmond

Activities at the Port of Richmond are one of the largest sources of diesel pollution in Inner West County. As a landowner, the Port of Richmond can negotiate with its tenant Terminal Operators to require reductions in pollution. This can be done, for example, by limiting emissions from ships docked at the Port and requiring ships to use a shore-side power supply. Cargo handling equipment emissions can significantly be reduced through repowers, retrofits, or replacements with lower emission equipment. Overall the Port should participate in efforts by the US EPA and the California Air Resources Board (CARB) to develop control measures and technologies for ports. The Port of Richmond could be a good location for new technology demonstration projects.

Trains: *Locomotive photographed while idling in downtown Point Richmond, California.*

Recommendation: Reduce pollution from construction equipment

Construction equipment, or off-road vehicles as they are sometimes called, is a significant source of diesel pollution in the area. Much of this equipment is used by private contractors during the construction of homes and commercial buildings. Richmond and San Pablo should amend their land-use permits to require contractors to use upgraded or retrofitted equipment. Local governments also use many of these off-road vehicles for road maintenance and other projects. These public works vehicles should also be upgraded or retrofitted.

Recommendation: Focus incentives to fund diesel pollution reduction projects in Inner West County

The Carl Moyer program is a 6-year-old program, administered by CARB statewide and the Bay Area Air Quality Management District (BAAQMD) locally, that offers incentives to projects that reduce emissions from heavy-duty diesel vehicles and equipment. In addition to providing information to local fleets, agencies should allocate some existing and future incentive

funding to Inner West County. The Air District is required to reserve at least 50 percent of its Carl Moyer Program funds for agency-defined environmental justice communities. Although Inner West County fits the Air District's criteria, few projects have been funded in the area to date. The District should ensure that in future years that Inner West County is receiving adequate funding. The projects to be funded could include:

- Installing emission reduction technology such as diesel particulate matter filters for trucks or idle limiting technology for locomotives (retrofits);
- Replacing older diesel engines with newer and lower emission diesel engines in existing vehicles and equipment (repowers);
- Subsidizing the purchase of a newer vehicle or piece of equipment to replace an older diesel vehicle or piece of equipment (replacements).

Recommendation: Create a partnership of community groups, businesses, and agencies to develop strategies to reduce diesel pollution

Collaborative solutions developed by the community and business groups can help reduce the impact of diesel pollution while improving the local economy. The partnership should provide a venue to develop long-range strategies to reduce diesel pollution and to coordinate the efforts of the various stakeholders.

"Trains idle for way longer than they are supposed to. You can smell the diesel everywhere. Now that I know about diesel PM, I am concerned. Children, babies are inhaling that stuff."
- Margaret Judkins, San Pablo Resident

Recommendation: Improve outreach of vehicle take-back programs to owners of older diesel cars and pick up trucks

The BAAQMD's vehicle buy-back program offers incentives to scrap pre-1986 cars and light trucks, which removes a major source of pollution. The Air District and other agencies should improve outreach and target older diesel vehicles.

GOAL: Enforce existing regulations to reduce diesel pollution and keep it away from residential areas

Recommendation: Enforce the mandated truck and bus idling limits

Since February 2005, trucks and buses must comply with truck idling time limits. This regulation should result in a large reduction in diesel pollution, but these reductions will only be realized if compliance is monitored and penalties are assessed for violations. To that end, CARB, BAAQMD, local peace officers, and the community should develop a comprehensive enforcement plan. Agencies should widely distribute information on how to identify and report violations, and complaints should be addressed within one hour. Outreach should be enhanced by workshops to train residents on how to assist with enforcement.

Recommendation: Enforce truck routes and restrictions

Residents report numerous trucks on residential streets. Existing routes should be clearly marked, and the truck routes and restrictions should be properly

enforced, with the assistance of the community, to ensure compliance. Complaints from community members should be tracked and addressed promptly.

Recommendation: Perform additional outdoor air monitoring

Air pollution monitoring stations have been relocated several times. Three years of data are missing over a 15-year period. In addition, PM 2.5 – the smallest and most harmful kind of particle – is not being monitored in Inner West County. Agencies should install PM 2.5 monitoring stations in the area while ensuring that PM 10 monitoring continues in a more consistent fashion.

GOAL: Improve land-use planning to keep diesel pollution sources away from people

When considering the impact of sources of diesel pollution, it is important to understand how close these sources are to people. Recent land-use guidelines proposed by CARB suggest that residential areas and other sensitive sites should be at least 500 feet away from busy highways to reduce exposure.[26]

Recommendation: Change zoning and land-use policies to limit land use conflicts between residential areas and sources of diesel pollution

Proper land-use planning should be done at the beginning of new projects to minimize residential diesel exposure. Agencies should ensure that no major diesel sources are expanded or proposed near residential areas. Each new project proposed near existing sources of diesel pollution should be required to submit an analysis of exposure from the project's construction and operation, and cumulative exposure estimates should be included.

Local and regional agencies should adopt proximity limits to increase the distance between sensitive sites such as residential areas, schools, and hospitals, and diesel pollution sources such as roads and rail yards. Guidance can be obtained from CARB's Air Quality and Land Use Handbook.[27]

Recommendation: Develop a regional truck route to keep trucks away from people

Diesel trucks should be kept away from residential areas as much as possible. To that end, local and countywide agencies, as well as elected officials, should develop a regional truck route. This will prevent one city's truck route from forcing truckers to travel through residential neighborhoods in another area. Recommendations from the community, business owners, and truckers should be incorporated in the route and workshops for truckers should be conducted.

Recommendation: Ensure agencies work together on land use changes

It is important that federal, state, and local agencies coordinate their land use activities so that one agency's decisions do not go counter to the goals of another, including how trucks are routed through the community.

Recommendation: Create an environmental justice ordinance and incorporate EJ principles into general plans

The Environmental Justice Principles adopted at the First National People of Color Environmental Leadership Summit in 1991 articulate a number of goals that can improve the efficiency and equity of land-use decision making. Local and regional agencies should incorporate these principles into their general plans and ensure meaningful public participation and transparency.

Recommendation: Build overpasses or underpasses to separate vehicle and pedestrian traffic from train traffic

Residents often have to wait up to 20 minutes to cross rail tracks. Over- or underpasses will ease pedestrian and traffic flow and reduce idling emissions at rail crossings. Grade separation would also greatly improve traffic safety.

GOAL: Reduce indoor air pollution from diesel

Recommendation: Conduct an indoor air quality workshop for residents

Since people spend most of their time indoors, improving indoor air quality is a key step to reducing exposure to diesel pollution. Inner West County residents should be informed on how to improve indoor air quality. Agencies and community groups should conduct workshops to identify common indoor air quality issues and present solutions. Expertise and assistance from a broad range of community groups should be sought, and educational materials should be prepared in all languages spoken in the area and widely distributed.

Recommendation: Create a Healthy Homes project

A community-driven project should be developed to reduce indoor air pollution and especially diesel pollution. These efforts, which can include filters or retrofits to existing ventilation systems, should build on successful existing in-home programs in Inner West County such as the West County Asthma Advocates Trigger Check program. The reduction technologies and other strategies should be incorporated as a requirement in County and City housing codes for residences near diesel pollution sources.

GOAL: Educate the public and decision makers about diesel pollution impacts

Recommendation: Lead a diesel pollution tour for decision makers

Many elected officials and agency staff members have not personally witnessed the impact of diesel pollution. Residents feel it is important that decision makers see, for example, how close trains idle to their homes and schools, and how often trucks cut through their neighborhoods. Community groups should work together to lead a tour of the major diesel pollution sources in the area.

Recommendation: Educate diesel fleets about incentive programs

To date, Inner West County diesel fleets have not taken advantage of the funding sources available to reduce emissions. Lack of information on funding sources is thought to be one of the major barriers. To remedy this, the Air District, which is responsible for managing many of these programs, should conduct one-on-one meetings with local fleets to present funding opportunities and requirements. The Air District, in partnership with the Environmental Justice Resource Team, hosted a workshop in June 2005. Future workshops should include more participation by local fleet operators, including trucking dispatchers, and should be supplemented by one-on-one education meetings.

GOAL: Conduct ongoing research on impacts and solutions

Recommendation: Track indicators of diesel pollution and health

By tracking change over time, a diesel pollution indicator will help the community assess progress. Indicator information should include a list of major sources of diesel pollution including large fleets and stationary sources, and estimates of their diesel generating activities. Truck counts would be helpful in updating existing traffic information. Residents also want to see the costs of asthma and cancer estimated for the community. The indoor and outdoor levels of diesel pollution should continue to be monitored. Community members and decision makers should be provided regularly with updated information.

Recommendation: Study the feasibility and effectiveness of green barriers and sound barriers

Some scientists are studying the use of trees and shrubs as air pollution filters. Sound walls could both limit the spread of pollutants and the level of noise from sources such as rail yards. The potential benefits and costs of using trees and other vegetation to reduce diesel pollution should be assessed.

Recommendation: Implement new pollution reduction technology demonstration projects for ports and railroads

Demonstration projects can provide the opportunity for additional emission reductions before technologies are commercially available. Demonstration projects of promising technologies should be preferentially sited in Inner West County. Community groups should be involved in the selection of demonstration technologies and the oversight of the demonstration project.

Conclusion

Diesel pollution severely and unfairly impacts environmental justice communities like Inner West County. Through this research, we have documented what many West County residents already knew, that they face more diesel pollution than other parts of Contra Costa County. By presenting a range of achievable solutions, our hope is to help the community reduce the amount of diesel being dumped into the air and to improve the health and safety of the area.

Goal 1: Reduce Emissions of Diesel Pollution

Recommendation	*Partner Organization*	*Timeline*
A) Regulate diesel pollution at rail yards and in ports • Rail yards and ports are not currently required to reduce their overall contributions to air pollution. • Elected officials and agencies should develop and adopt legislation requiring pollution reductions at rail yards and ports, including reducing operating and idling pollution from sources such as switching locomotives, ships, and cargo handling equipment.	Calif. Legislature CARB BAAQMD	Long-term (1-2 years)
B) Reduce pollution from rail yards and sidings • Locomotive and cargo-handing emissions and idling should be reduced by using cleaner equipment and changing company policies. • Rail companies should provide a phone number and contact person residents can call to report excess idling.	BNSF Railroad Union Pacific Richmond Pacific	Mid-term (6 months-1 year)
C) Reduce pollution from the Port of Richmond • The Port of Richmond should renegotiate leases with its tenant Terminal Operators to reduce pollution from Port operations. • Emissions reductions should be sought from ships and cargo handling equipment.	Port of Richmond Port Tenants	Long-term (1-2 years)
D) Reduce pollution from construction equipment • Local governments should require construction equipment owners to reduce their equipment's emissions in order to obtain a construction permit. • Local governments should reduce diesel pollution emissions from their in-house fleets.	City Council of Richmond City Council of San Pablo Contra Costa Board of Supervisors	Mid-term (6 months-1 year) to Long-term (1-2 years)

C O N T I N U E D

Recommendation	*Partner Organization*	*Timeline*
E) Focus incentives to fund diesel pollution reduction projects in Inner West County • Few existing diesel pollution reduction programs have contributed funds to Inner West County. • Agencies should focus funding in Inner West County to install diesel particulate matter filters for trucks or idle limiting technology for locomotives (retrofits); replace older diesel engines with newer and cleaner diesel engines (repowers); and subsidize the purchase of newer vehicles/equipment to replace older units (replacements).	CARB BAAQMD	Mid-term (6 months- 1 year)
F) Create a partnership of community groups, businesses and agencies to develop strategies to reduce diesel pollution • Collaborative solutions developed by the community and business groups can help reduce the impact of diesel pollution while improving the local economy.	BAAQMD Contra Costa Co. AC Transit Port of Richmond Local businesses Community groups	Short-term (0-6 months)
G) Improve outreach of vehicle take-back programs to owners of older diesel cars and pick up trucks	BAAQMD	Short-term (0-6 months)

***Transfer yards**: Transfer yards, like this one photographed from the Richmond Parkway, often produce huge amounts of diesel pollution from idling trucks and trains, and from diesel powered cargo-handling equipment.*

Goal 2: Enforce Existing Pollution Regulations

Recommendation	*Partner Organization*	*Timeline*
A) Enforce the mandated truck and bus idling limits • Trucks and buses are not allowed to idle for more than 5 minutes, except in special circumstances. • Agencies should develop and implement an enforcement plan for the truck idling limit, which should be submitted to community members for review before adoption. • CARB should publish broadly a phone number for residents to report idling vehicles, and ensure that a system is in place to respond to complaints within one hour. • Agencies should conduct a series of workshops to train residents to assist with enforcement.	CARB BAAQMD Local law enforcement Local businesses School and transit districts	Short-term (0-6 months)
B) Enforce truck routes and restrictions • Trucks should be kept away from residential areas as much as possible. • Agencies should enforce truck restrictions and increase penalties on prohibited routes. Agencies should conduct a workshop to train truckers on the designated and prohibited streets. • Agencies should conduct a workshop to train residents to assist with enforcement, and develop a system to track residents' complaints and address recurring problems.	WCCTAC Contra Costa County City governments Local law enforcement Port of Richmond	Mid-term (6 months- 1 year)
C) Perform additional outdoor air monitoring • Particulate matter has been irregularly monitored in Inner West County. • Agencies should ensure monitoring equipment is operated in a consistent manner, guaranteeing there is no gap in monitoring data. • PM 2.5 monitoring equipment should be installed in Inner West County.	CARB BAAQMD	Mid-term (6 months- 1 year)

Goal 3: Keep Diesel Pollution Sources Away From People

Recommendation	*Partner Organization*	*Timeline*
A) Change zoning and land-use policies to limit land use conflicts between residential areas and sources of diesel pollution • Agencies should ensure that no diesel sources (including rail yards, transfer stations, and distribution centers) are expanded or proposed near residential areas. • Agencies should adopt proximity limits and analyze cumulative impacts from diesel pollution when proposing land use changes near diesel pollution sources. This can be part of a comprehensive health impact analysis.	Contra Costa Co. City governments	Long-term (1-2 year)
B) Develop regional truck route to keep trucks away from people • Local and county-wide agencies and elected officials should develop a regional truck route and truck prohibitions, with input from all stakeholders, so that one city's truck routes do not cause truckers to travel through neighborhoods in another area.	WCCTAC Contra Costa Co. City Governments	Long-term (1-2 years)
C) Ensure federal, state, and local agencies work together on approving land use changes	Contra Costa Co. City governments	Mid-term (6 months-1 year)
D) Create an environmental justice ordinance and incorporate EJ principles into general plans • By incorporating EJ principles, we can ensure that land use permitting and other processes are transparent and include meaningful community participation.	Contra Costa Co. City governments	Mid-term (6 months-1 year)
E) Build over- or underpasses to separate vehicle and pedestrian traffic from train traffic	WCCTAC Contra Costa Co. City governments	Long-term (1-2 years)

Goal 4: Reduce Indoor Air Pollution from Diesel

Recommendation	*Partner Organization*	*Timeline*
A) Conduct a community indoor air quality workshop • People spend most of their time indoors; Inner West County residents should be informed on how they can mitigate health impacts due to indoor air quality. • Agencies and community groups should conduct a multilingual workshop to identify common indoor air quality issues and present solutions to reduce risks.	CARB BAAQMD Contra Costa County Community groups	Short-term (0-6 months)
B) Create a Healthy Homes project • Create a project to develop and implement technologies and strategies to reduce indoor levels of diesel pollution, building upon existing in-home intervention programs in Inner West County. • Incorporate reduction technologies and strategies in county and city housing codes.	Contra Costa Co. City governments Community groups	Mid-term (6 months-1 year)

Goal 5: Educate Public and Decision Makers on Diesel Impacts

Recommendation	*Partner Organization*	*Timeline*
A) Lead a diesel pollution tour for decision makers • Many decision makers have not witnessed the impact of diesel pollution on Inner West County communities. • Community groups should lead elected officials, agency staff, and media representatives on a tour of diesel pollution sites in Inner West County.	Community groups Agencies Elected Officials	Short-term (0-6 months)
B) Educate diesel fleets about incentive programs • Local diesel fleets have not taken advantage of the funding available to reduce their impacts. • The Air District should conduct one-on-one trainings with diesel vehicle and equipment owners. • The Air District should assist fleets in filling out program application materials.	BAAQMD Environmental Justice Resource Team Local Fleet Operators	Short-term (0-6 months)

Goal 6: Conduct Ongoing Research to Identify Impacts and Solutions

Recommendation	*Partner Organization*	*Timeline*
A) Track indicators of diesel pollution and health • Identify major sources of diesel pollution including large fleets and stationary sources. • Estimate the costs of health impacts like asthma. • Continue truck count activities and continue monitoring indoor and outdoor levels of diesel particulate matter. • Provide regularly updated information to community members and decision makers.	Contra Costa Co. BAAQMD Community groups	Ongoing
B) Study the feasibility and effectiveness of green barriers and sound barriers • Trees, shrubs, and sound walls have been suggested to act as filters of air pollution. • The potential benefits and costs of using trees, other vegetation and walls to reduce diesel pollution should be assessed.	CARB BAAQMD	Short-term (0-6 months)
C) Implement new pollution reduction technology demonstration projects for ports and railroads • Demonstration projects can provide the opportunity for additional emission reductions before technologies are commercially available. • Demonstration projects of promising technologies should be preferentially sited in Inner West County. • Community groups should be involved in the selection and oversight of a demonstration technologies project.	CARB BAAQMD Port of Richmond Railroad companies	Mid-term (6 months-1 year)

This report and the technical report it is based on are available online:

www.pacinst.org/reports/west_county_diesel

Glossary

Aethalometer: An instrument that provides a minute-by-minute measurement of the amount of black soot in the air. This is the primary instrument used in the Inner West County study. See "black soot."

Bay Area Air Quality Management District (BAAQMD): Agency responsible for air quality in the following San Francisco Bay Area counties: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, the western half of Solano and the southern half of Sonoma counties. The agency's role is to make sure the levels of air pollution in the Bay Area are below the levels determined to be unhealthy.

Black soot: Black particles that result from burning materials that contain carbon such as diesel or wood. Also referred to as black carbon. Black soot is one of the components of diesel particulate matter. See "diesel particulate matter."

California Air Resources Board (CARB): Agency responsible for air quality for the state of California.

Cancer risk (per million): Increase in possible cancer cases for a population of one million people due to exposure over 70 years to a certain level of toxic pollution.

Carl Moyer Program: CARB program providing incentives to diesel truck and equipment owners to reduce their emissions. The program funds replacements, repowers, and retrofits. See "replacement," "repower," and "retrofit."

Diesel particulate matter (DPM): Solid particles resulting from the combustion of diesel fuel. Diesel particulate matter is considered a toxic air contaminant in California. See "toxic air contaminant."

Diesel pollution: Exhaust from the combustion of diesel in vehicles and equipment including diesel particulate matter and smog-forming pollutants.

Micron: A unit of length that is one million times smaller than a meter. A human hair measures about 100 microns in width.

Mobile source: All pollution sources that can move either on their own or attached to a moving source. Cars, trucks, ships, trains, and airplanes are mobile sources.

Replacement: Replacing older diesel vehicles or equipment with newer vehicles or equipment.

Repower: Replacing older diesel engines with newer, less polluting engines in existing vehicles and equipment.

Retrofit: A project where technology to reduce diesel pollution is installed in existing vehicles and equipment. Retrofit projects include installing diesel particulate matter filters on trucks or idle control technology on locomotives.

Stationary source: All fixed pollution sources such as factories and power plants.

Toxic air contaminant: A chemical that has been determined to be harmful at any level of exposure. Diesel particulate matter is considered a toxic air contaminant in California.

Endnotes

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[17] Fox, Maggie. 2002. Finnish Study Links Pollution with Heart Disease. *Reuters*.

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[19] For a complete list of reports reviewed see the Technical Report. www.pacinst.org/reports/west_county_diesel/

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About the Partners

Community Health Initiative

The Community Health Initiative was formed to build partnerships between residents, organizations and agencies to address current health policy issues that impact the quality of life in our communities and give community residents a significant voice in planning to avoid future impacts due to development and increased population in the area. The Community Health Initiative is comprised of the following 14 indigenous community based organizations that have been working together in varying capacities for over a decade to address the needs of the residents in our communities: Asian Family Resource Center, Neighborhood House of North Richmond, Baptist Ministers Association, North Richmond Ministerial Council, Exchange Works, North Richmond Municipal Advisory Board, Greater Richmond Inter-Faith Program, Old Town San Pablo Committee, Iron Triangle Neighborhood Council, Parchester Village Neighborhood Council, Ma'at Youth Academy, West County Toxics Coalition, NAACP, Robinson-Weeks-Robinson Scholarship Fund, and many unaffiliated residents.

Contra Costa Health Services and the West County Asthma Coalition

Contra Costa Health Services (CCHS) is an integrated system of health care services, community health improvement programs, and environmental protection initiatives that strive to improve the health of all residents of Contra Costa, especially those who are the most vulnerable for health problems and their outcomes. CCHS provides staff to and is the fiscal agent for the West County Asthma Coalition (WCAC). The WCAC is an inclusive, broad-based partnership of organizations and community members whose mission is to reduce the impact of asthma among West Contra Costa County residents through outreach, education, and policy advocacy efforts aimed at preventing asthma and improving the lives of people affected by asthma. The WCAC receives funding support from The California Endowment.

Neighborhood House of North Richmond

Neighborhood House of North Richmond is a private, non-profit, multi-service agency, with a long community-based tradition of identifying those in need and establishing the resources to address their problems. Neighborhood House has evolved from the community organizing efforts in the 1950's by the Quakers to become a progressive agency charged with the responsibility of assisting individuals and community as a whole to become empowered to take control of their own lives for the betterment of all. The mission of Neighborhood House is to improve the quality of life for the residents and community of North Richmond and to help provide services in areas such as Housing, Education, Employment, Economic Self-Sufficiency and Health to West Contra Costa County.

Pacific Institute

The Pacific Institute is an independent, non-profit center created in 1987 to conduct research and develop solutions to the related problems of environmental protection, economic development, and human health. Our *Community Strategies for Sustainability and Justice* program was launched in 1995 to assist communities in addressing critical human health and environmental issues. Our goal is to empower community residents so that they can have a real say in their future. Through our numerous community based participatory action research projects, we have helped community residents to ask questions, conduct research, and develop solutions to advocate for improvements in their quality of life. Our main initiatives in the coming year are to extend our successful work on Neighborhood Environmental Indicators, and to build local and regional power to reduce diesel pollution and address goods movement expansion.

West County Toxics Coalition

West County Toxics Coalition was founded as a community-based environmental justice organization in 1986 to empower residents of Richmond and western Contra Costa County to fight toxic exposure, protect the environment, and protect the health and safety of residents living near polluting industries and hazardous sites. Henry Clark is the Executive Director of West County Toxics. He also serves as Co-Chair of the CALFED Environmental Justice Subcommittee and has been nominated for a second term for a seat as the advisory member of the CalEPA Environmental Justice Advisory Committee.

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