

Initial Results from the East Bay Diesel Exposure Project



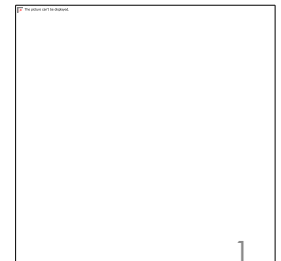
Asa Bradman

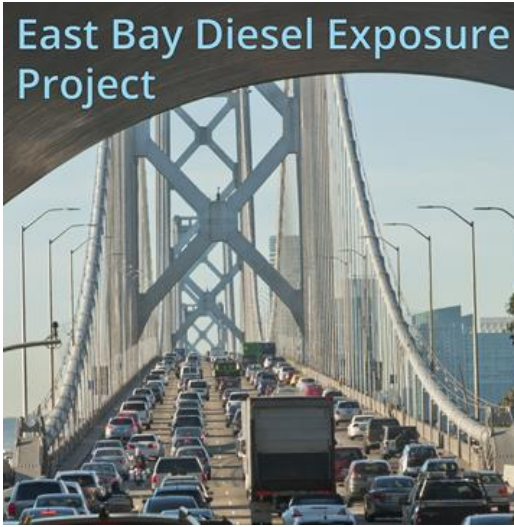
Center for Environmental Research and Children's Health

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Thank you to our community partner

West Oakland Environmental Indicators Project

Ms. Margaret Gordon and Brian Beveridge



**West Oakland
Environmental
Indicators Project**

About the project

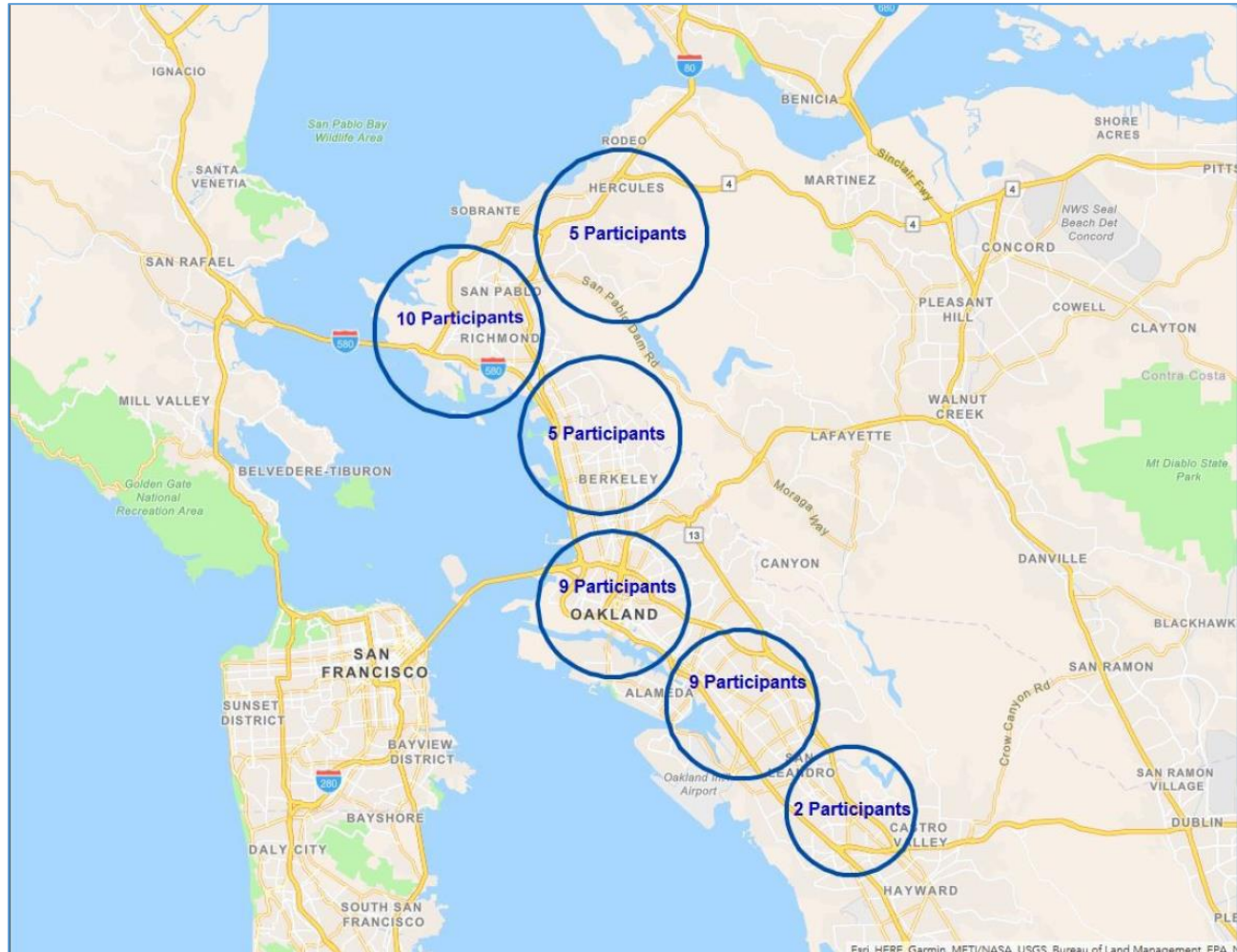
- 40 families participated
 - One parent and one child (2-10 years old)
- Measured chemicals from diesel exhaust in urine, indoor air, and house dust
- Visited each household two times, about 4-6 months apart
- Completed visits between January 2018 and February 2019



Project locations

East Bay

- Oakland
- Richmond
- Other locations along freeways (I-80, I-580, I-880)



What did the laboratory find?

Diesel exhaust chemicals were found in:

- All 40 children
- 39 of 40 parents
- Almost all house dust samples
- Most of the indoor air samples



What have we learned so far?

EBDEP results show that:

- There is widespread exposure to diesel exhaust chemicals in the East Bay
- Parents had higher levels of one diesel exhaust chemical compared to their children
- Levels of diesel exhaust chemicals tended to be higher in colder months

How does EBDEP compare to the CARE-LA Study?

- On average, EBDEP participants had higher levels of diesel exhaust chemicals than participants in the California Regional Exposure Study in Los Angeles (CARE-LA)
- There were differences in how EBDEP and CARE-LA selected participants
 - EBDEP recruited participants mostly from areas with high diesel exhaust emissions
 - CARE-LA recruited participants from all over LA county, and did not focus on areas with high diesel exhaust emissions

Example of truck traffic near participants' homes



Median*

(miles traveled per day)

~Half mile circle

289

~One mile circle

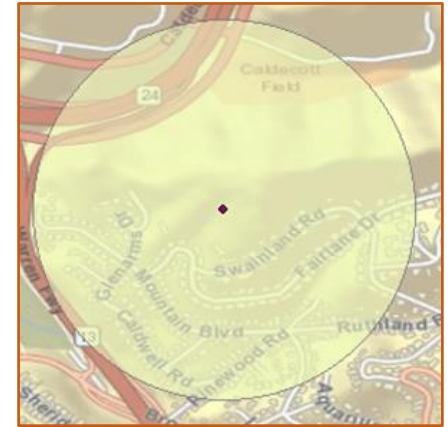
3,846

~Two mile circle

15,271

*The median is the middle value for all 40 homes.

Example of truck traffic near schools and childcare



Median*

(miles traveled per day)

~Half mile circle

377

~One mile circle

5,295

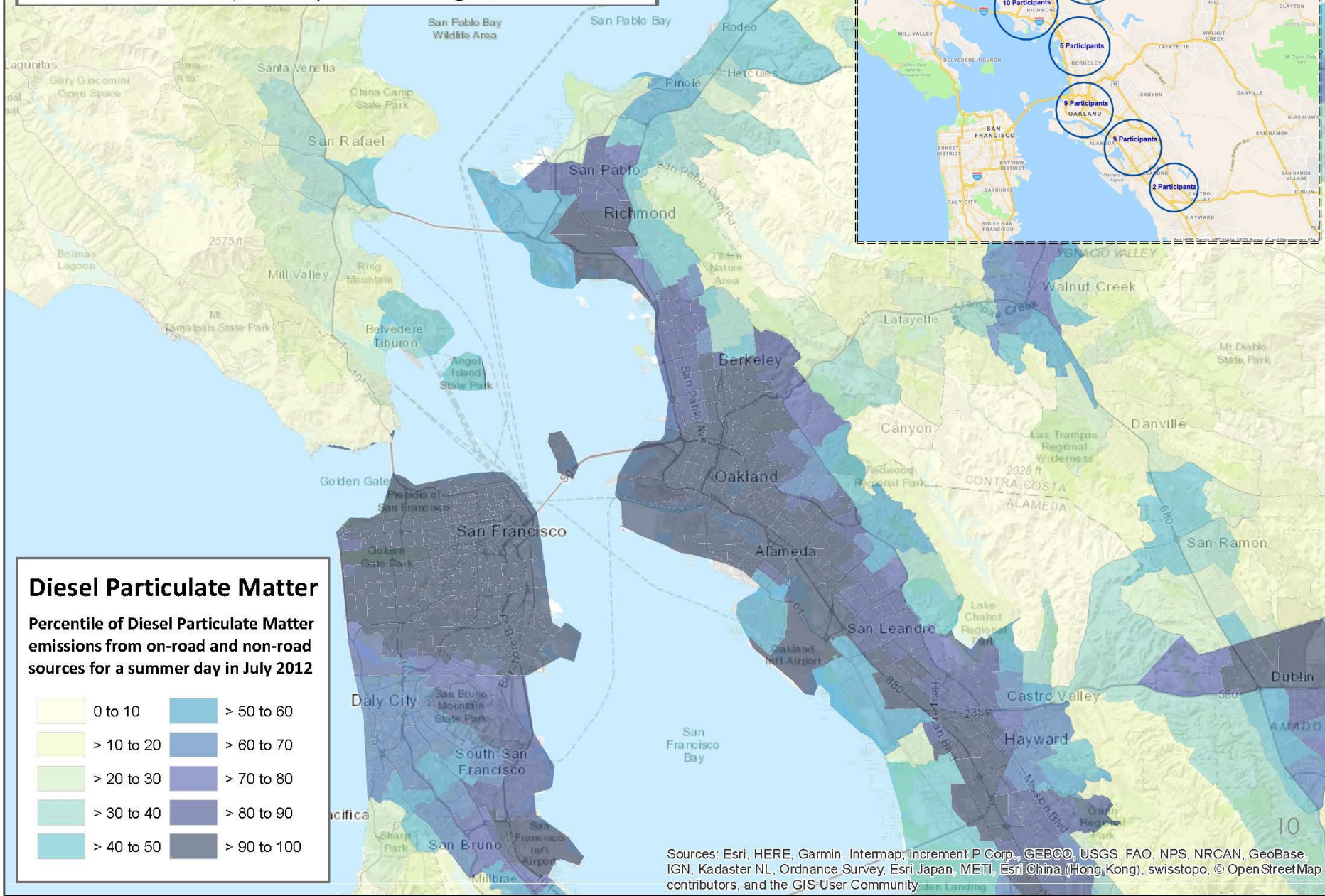
~Two mile circle

16,555

*The median is the middle value for the 28 school and childcare locations reported at the first home visits.

CalEnviroScreen map of diesel exhaust pollution in the San Francisco Bay area

For more information, visit <https://oehha.ca.gov/calenviroscreen>



EBDEP parents

Gender (%)

Female adults	95
Male adults	5

Ethnicity (%)

African American	20
Hispanic/Latino	40
Caucasian	35
Asian	5
American Indian/Alaskan Native/Other Pacific Islander	5
Prefer not to identify	3

Age, mean (SD)	36.2 (8.1)
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40 adults; some individuals selected more than one ethnicity

What did we ask participants to do?

Two rounds of home visits:

- Exposure questionnaires (day 1 & day 4)
- Home walk-through
- GPS data loggers for child & parent
- Activity diaries for child & parent
- Black carbon sensor placed in home
- Vacuum dust sample
- Urine samples from child & parent
 - 15 of the 40 families collected daily urine samples for four days



The second round of home visits was done about 4-6 months after the first round

Air quality concerns of participants

- Refinery
- Metal foundry
- Rail/train emissions
- Freeways
- Idling cars and trucks
- Ports
- Wildfires
- Construction
- Secondhand smoke
- Gas use in home (heating, appliances, etc.)
- Riding the bus
- Soot/black dust in home



Comments from participants

Refinery: "...very concerned. Same as everybody else -- the fumes, the smoke I see every day, I don't think it's healthy for anyone in the neighborhood or the world."

Metal foundry: "...strong smell comes from there. School has protested, but nothing has been done."

"Concerned because we live near the highway and the railroad tracks, and our daughter has asthma."

"My son's daycare is right off the freeway (580), so I wonder about the air quality there."

"We are close to the freeways -- they are doing a lot of work there, so we are exposed. Also, the refinery affected us when they had that issue."



What can be done?

The West Oakland Community Action Plan addresses what we learned in EBDEP, by including strategies to:

- Re-route and reduce truck traffic in residential neighborhoods
- Reduce diesel emissions from the port
- Install high-efficiency filtration systems at schools, day care facilities, community centers, and other sites



What are the next steps for EBDEP?

We will examine which factors might lead to the highest exposures, by looking more closely at:

- Traffic and other diesel exhaust sources near participants' homes, work, and schools/childcare
- Time at home vs. other locations
- Daily activities, such as working with diesel equipment or driving
- Weather conditions

Look at diesel exhaust exposures from traffic and other sources



SF and East Bay



West Oakland

LEGEND

- Highway
- HPMS road segment
- + + + Railway line
- ◆ BAAQMD permitted emission source

Use information from the GPS loggers about where participants spent time



*Example, not based on actual data

New AB 617 projects

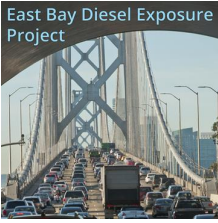
- Work with communities, the California Air Resources Board, and local air districts to:
 - Identify key air pollutants of concern that can be biomonitored
 - Design biomonitoring and other studies to help evaluate specific exposure reduction strategies
 - One example could be measuring chemicals in children before and after installation of air filters in schools



East Bay Diesel Exposure Project



We would like to thank the participating families for their valuable time and effort!



Acknowledgements

81st Avenue Branch Library
 Acorn Woodland Elementary School
 Acorn Town Center
 Acta Non Verba
 Alameda County WIC
 Aspire Eres Academy
 Bay Community Fellowship childcare
 Brighter Beginnings
 Bridges Academy at Melrose
 Brookfield Elementary School
 City of Oakland, Oakland Public Works
 Department, Bureau of Facilities and
 Environment
 City of Richmond, Economic Development
 Commission and Environmental and Health
 Initiatives Division
 City Slickers Farm
 Communities for a Better Environment
 Community Housing Development
 Corporation
 Contra Costa College Early Learning Center
 Contra Costa County Board of Supervisors
 Contra Costa County Family Service Center
 Contra Costa County Head Start
 Contra Costa County WIC
 East Oakland Boxing Association

East Oakland Youth Development Center
 Encompass Academy
 Esperanza Elementary School
 Fred T. Korematsu Discovery Academy
 Friendship Christian Center
 Grant Elementary School
 Greenleaf Elementary School
 Guardians of the Planet club
 Happy Lion Day Care Center
 Hilltop Family YMCA
 Ile Omode
 Kaiser Permanente Richmond
 KIPP Bridge Academy
 LifeLong Brookside Richmond Health Center
 LifeLong Brookside San Pablo Health Center
 Lighthouse Community Public Schools
 Lincoln Child Center
 Madison Park Elementary School
 Mandela Foods Co-Op
 Mandela Gateway
 Martin Luther King Jr. Elementary School
 Montalvin Manor Elementary School
 Native American Health Center
 New Highland Academy
 North Richmond Center for Health

Oak Center Cultural Center
 Oakland Climate Action
 Oakland Unified School District
 Planting Justice
 Prescott Circus
 Prescott Elementary School
 Prescott Joseph Center
 Richmond College Preparatory
 Richmond Public Library
 Rose Foundation
 Saint Vincent's Day Home
 San Pablo Library
 Self-Help/Community Trust Credit Union
 Tassafaronga Recreation Center
 Thurgood Marshall Early Head Start
 Verde Elementary School
 Vincent Academy
 West Oakland Branch Library
 West County First 5 Center
 West County Health Center
 Woodland Elementary School
 YMCA of the East Bay
 YWCA Contra Costa/Sacramento –
 Richmond Preschool Program

Questions & discussion

