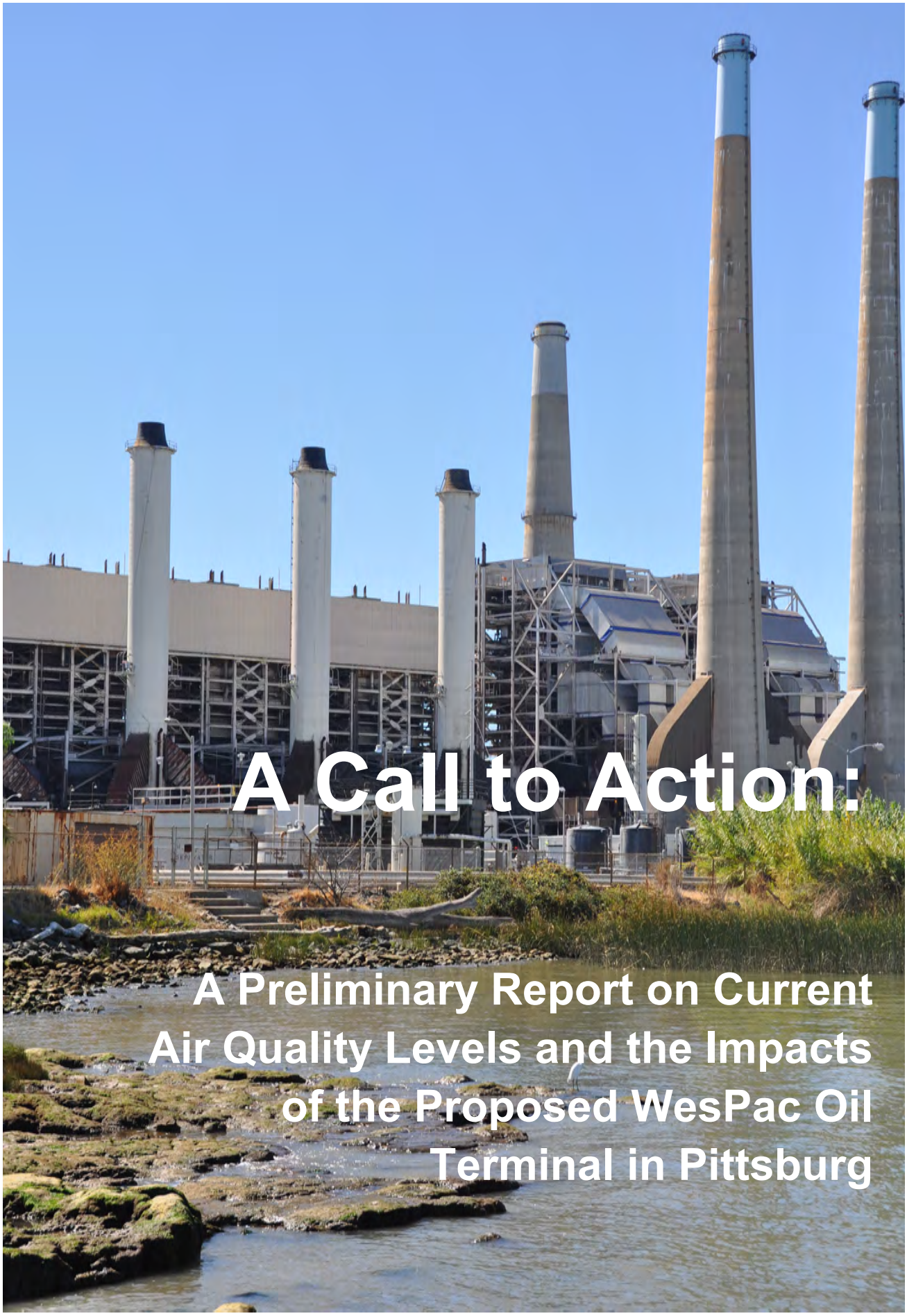

A Call to Action:

A Preliminary Report on Current Air Quality Levels and the Impacts of the Proposed WesPac Oil Terminal in Pittsburg

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Publication date: January 21, 2014
Location: Pittsburg, California

This report is a collaborative project with all content written and compiled by members of the Pittsburg Defense Council (PDC) and Global Community Monitor (GCM) staff.

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Executive Summary

Pittsburg Energy Infrastructure Project

WesPac Energy Group (WesPac) has proposed to reactivate an enormous 125-acre crude oil storage project in Pittsburg, CA at the NRG, Energy Pittsburg Generating Station. WesPac's oil terminal would bring in an average daily amount of 242,000 barrels (equivalent to 10 million gallons) of crude oil per day by ship and rail -- more than 100 tanker cars each day -- using refurbished pipelines to deliver it for storage to PG&E's old tanks near the delta waterfront. The maximum daily amount of crude oil to be brought in is reported to be 375,000 barrels (15,750,000 gallons) per day.[1]

If the WesPac project is approved, residents would be exposed to noise, diesel and fine particulate, chemicals and odors from rail traffic, in addition to pollution from hazardous materials being carried as freight. The proposed WesPac project's pollution could also significantly increase cancer and asthma rates for Pittsburg. The threats to public health, air and water quality, and safety posed by this project are unacceptable. The City of Pittsburg could also suffer economically; Pittsburg homeowners would most likely see a decrease in their property values, and downtown businesses may be jeopardized if visitors stay away because of the noise, smells and additional pollution.

Because industrial accidents can and do happen, a crude oil or chemical spill associated with the proposed WesPac terminal could devastate the Bay and the Delta, damaging fishing and recreation activities. The recent devastation associated with rail explosions in Lac-Mégantic, Quebec; Casselton, ND; and Aliceville, AL are just a few examples of potential scenarios in PIttsburg. The crude oil pipeline leaks and spills in Kalamazoo, MI and Mayflower, AR led to entire neighborhood evacuations and a costly ongoing environmental clean up.

Pittsburg is a "Medically Vulnerable Community"

Pittsburg is a community intertwined with industry. Industrial facilities can be seen, heard and smelled from parks, homes and children's schools. New data analysis by the Contra Costa County Health Services shows that between 2009 and 2011, Pittsburg had the highest rates of asthma emergency room visits in Contra Costa County. During that period, Pittsburg had over 100 cases of asthma hospitalizations per 10,000 Pittsburg residents. In comparison, the Orinda and Moraga area had less than 17 asthma hospitalizations per 10,000 people. According to the Contra Costa County Health Services, "This evidence supports the presumption that the community in Pittsburg is medically vulnerable."[2]

Sample Results

Due to the severity of the asthma epidemic and existence of other industries, residents began asking questions about air quality. The Pittsburg air monitor station was closed in 2008 by the Bay Area Air Quality Management District.[3] Given the lack of a local air monitoring station, residents wanted to know what the baseline air quality is in Pittsburg, prior to potential increases from the WesPac project.

Pittsburg Defense Council, a local grassroots group working to educate residents about health and safety issues associated with the proposed WesPac project, was trained by Global Community Monitor to conduct a pilot baseline air quality study. This training was done after a local "Toxics Tour," where Pittsburg residents and other local concerned citizens toured various industrial facilities that are already in operation in and around the Pittsburg area including: General Chemical, Criterion Catalyst & Technologies, GenOn Pittsburg Generating Station, K2 Pure Solutions, Dow Chemical, USS Posco, and United Spiral Pipe. Community leaders gathered 10 air samples between December 14-31, 2013 in and around Pittsburg, California.

According to Dr. Mark Chernaik, data interpretation expert with Science for Citizens, the Pittsburg dataset has some of the highest levels of diesel particulate seen in filtered air samples collected in the United States by community based air monitoring projects. Dr. Chernaik stated that diesel air sample results “are high enough to be associated with an excess risk of cardiovascular and respiratory hospitalizations on the day of exposure.” All five of the filtered air samples analyzed contained diesel levels high enough to be associated with these health risks.

An additional five air samples were analysed for fine particulate matter ($PM_{2.5}$). Four of the five air samples contained $PM_{2.5}$ exceeding the United States Environmental Protection Agency (US EPA) 24-hour short-term National Ambient Air Quality Standard. All five samples were designated “unhealthy” for sensitive populations when compared to the US EPA’s Air Quality Index.

Recommendations

Due to the medical vulnerability of the Pittsburg community, proximity to sensitive receptors, poor air quality and the high probability of accidents, Pittsburg Defense Council and Global Community Monitor make the following recommendations to the City of Pittsburg officials and relevant State and Federal agencies responsible for research, permitting and approval of the WesPac Project:

(1) For the Pittsburg Planning Commission to NOT approve the Recirculated Draft Environmental Impact Report (RDEIR) and to recommend to the Pittsburg City Council that they reject the project;

(2) For the Bay Area Air Quality Managment District (BAAQMD) to re-install a permanent air monitoring station in Pittsburg; and

(3) For the Bay Area Air Quality Management District (BAAQMD) to designate Pittsburg as a *Community Air Risk Evaluation* (CARE) Community.

Who We Are

Pittsburg Defense Council (PDC) is a grassroots group fighting the proposed WesPac oil storage and transfer terminal.[4] The group formed in September 2013 to oppose the proposed WesPac project. Neighbors got to work and started to inform the community through intensive outreach efforts that included door-to-door canvassing, phone banking, hosting community meetings and activating a website. The group received support from various Bay Area non-governmental organizations (NGO's) and organizers in surrounding cities. From this effort, hundreds of people from the local community and Bay Area communities have joined forces and are now fighting relentlessly to STOP WESPAC's proposed project.

Global Community Monitor (GCM) founded in 2001, trains and supports communities in the use of environmental monitoring tools to understand the impact of fossil fuel industry pollution on their health and the environment. GCM's work focuses on disempowered "fenceline" communities harmed by serious air pollution from industrial sources and whose concerns agencies and responsible corporations are ignoring.[5]

Pittsburg Background

Pittsburg, California is a city located at the intersection of Sacramento and San Joaquin Rivers in eastern Contra Costa County, about 40 miles northeast of San Francisco. The City of Pittsburg is part of a proposed waterfront economic development initiative which considers the deep water channel, marine terminals, railroad lines infrastructure as unique features for further industrial development.

Downtown Revitalization, A Community in Transition

The City of Pittsburg has invested significant resources to beautify and improve its downtown area. Downtown Pittsburg is known as "Old Town" and now includes renovated cannery buildings with small-craft marinas, several new housing projects, a renovated public marina, fine food, and unique shopping experience.

Pittsburg residents are proud of what city officials have achieved through these efforts. The City's general plan states that "downtown revitalization is an issue of citywide importance. A vital Downtown can provide identity and a sense of place for all of Pittsburg."[6] Old Town is where local residents and visitors enjoy going out with family and friends to eat, to attend arts & crafts fairs, and to enjoy of the variety of products and services offered by local businesses.

Demographics

Pittsburg is a small "majority minority" town of about 63,000 people. According to the 2010 Census, the residents are 44% White, 18.8% Black, 32.2% Hispanic, 13.1% Asian Pacific Islander, and 0.8% American Indian or Alaskan Native. The median age is 32 years old.

Pittsburg and neighboring Bay Point are home to high percentages of families surviving on low incomes. Table 1 below indicates the proportion of residents in each city living at 100% of the Federal Poverty Rate. The Federal Poverty level for a single person is $11,344 a year; for a family of four it is $22,314.[7]

Table 1: Poverty Rates of Contra Costa Cities, 2010

Concord	9.5%
Antioch	12.1%
Pittsburg	**16.3%**
Richmond	18.3%
Bay Point	**31.9%**

As the following table details, half of Pittsburg residents earn under $50,000 a year, including one-third earning incomes under $35,000:

Table 2: Income Levels of Pittsburg Residents

$0 - $34,999	**33%**
$35,000 - $49,999	**17.2%**
$50,000 - $74,999	22.6%
$75,000 - $99,999	14.6%

According to a May 2013 report by Contra Costa Health Services, **19% of Pittsburg residents have no health insurance coverage**. This is significantly higher than the county average of 12%.[8]

Medically Vulnerable Community

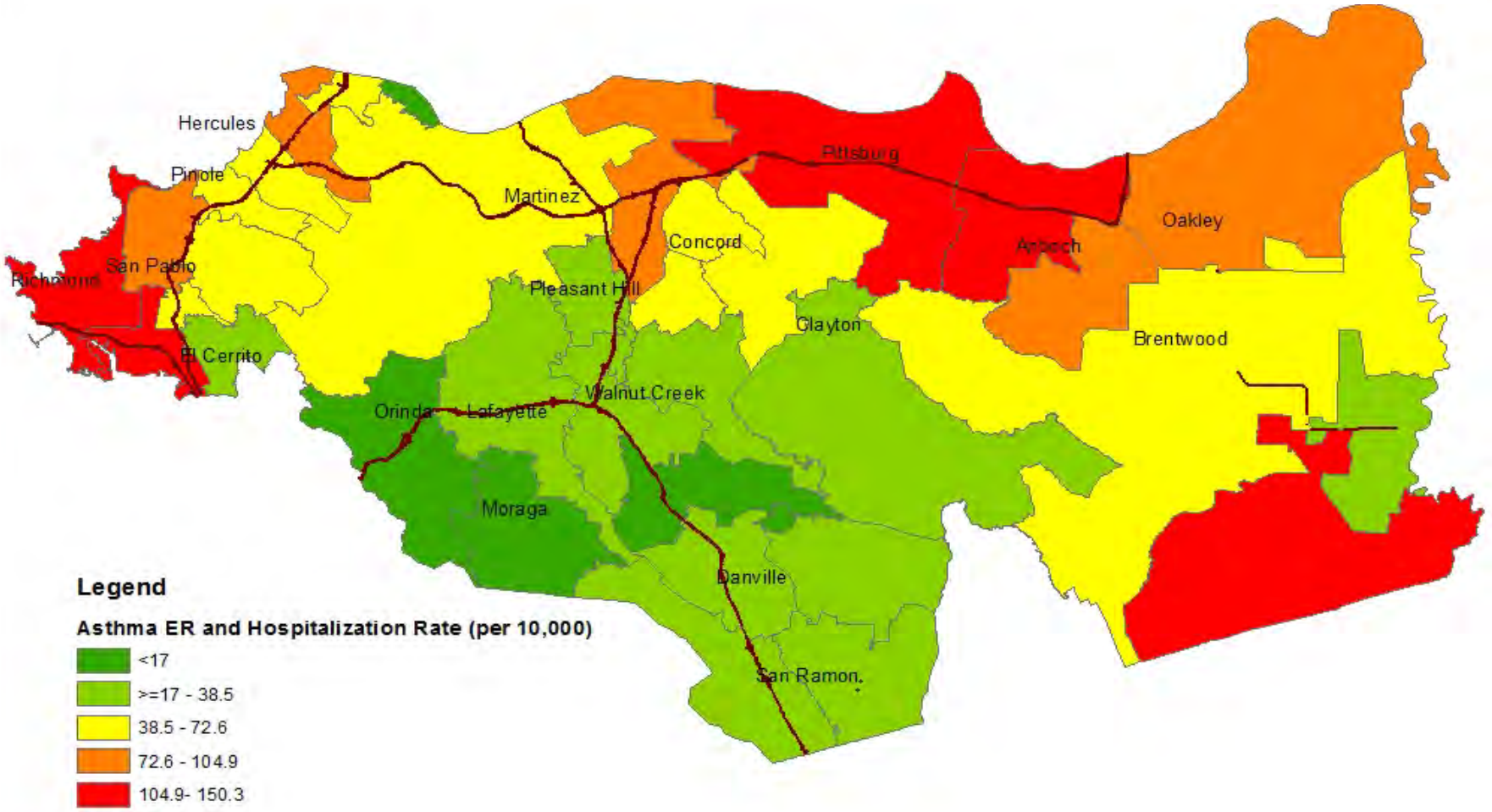
Asthma rates

Between 2009 and 2011, Pittsburg had the highest rates of asthma hospitalization in Contra Costa County. Over 100 cases of asthma hospitalizations per 10,000 Pittsburg residents were documented by Contra Costa County Health Services. In comparison, the Orinda and Moraga area had less than 17 asthma hospitalizations per 10,000 people (see map and table below).[9] Correspondence with staff at the agency stated "this evidence supports the presumption that the community in Pittsburg is medically vulnerable."[10]

According to the California Healthy Kids Survey for Pittsburg Unified School District (PUSD) conducted in 2010-11, 24% of elementary school age students reported having asthma and 22% of students reported having trouble breathing (eg, shortness of breath, wheezing, or a sense of lightness in the chest) when not exercising. This survey was completed by ~459 students attending a public elementary school in PUSD.[11]

The Office of the Attorney General has weighed in on the WesPac project, citing health concerns as well: "...the residents of Pittsburg are already facing some of the highest pollution burdens in California, and, for example, are in the 98th percentile for emergency room visits for asthma…"[12]

Age Adjusted Asthma Emergency Room Visit and Hospitalization Rates by Zip Code



Source: OSHPD Confidential Datasets for Contra Costa, 2009-2011; Denominators from 2010 Census

Asthma rates comparing by city and to county

Age Adjusted Asthma ED and Hospitalization Rates per 10,00 People Per Year						
Region	**ED visits**		**Hospitalizations**		**Combined**	
	Rate	±	Rate	±	Rate	±
Pittsburg	114.0	3.6	18.2	1.5	132.3	3.9
Richmond	86.1	2.3	18.8	1.1	104.9	2.5
CCC	62.8	0.8	11.0	0.3	73.8	0.8

Age Adjusted Rates of Combined Asthma Hospitalizations and ED Visits per 10,000 people per year						
Race	Pittsburg		Richmond		Contra Costa County	
	Rate	±	Rate	±	Rate	±
Black/African American	290.4	14.9	253.5	8.4	241.4	5.1
American Indian, Alaska Native	38.0	38.0	68.0	41.6	71.8	16.3
Asian/Pac Islander	64.2	7.3	40.7	4.4	34.9	1.5
Hispanic/Latino	89.1	4.8	64.5	3.0	64.3	1.5
White	161.2	10.0	74.1	5.2	51.9	1.0
Other	146.0	23.2	108.6	13.1	93.4	4.9

Source: OSHPD Confidential Datasets for Contra Costa, 2009-2011; Denominators from 2010 Census

Personally Affected

Drewcillia Wyatt, Pittsburg resident since November 2005, started suffering from respiratory related issues after moving to the area. Wyatt, a charismatic in-home care service provider, says that sirens announcing the release of vapors from the facilities behind her house go off twice a day; and when they do, she and her neighbors are told to go inside their houses and close all windows. “During the summer, I have to turn off the air conditioning, otherwise the smell of hot vinegar or sulfur, from the vapors, fills the rooms in my house. When this smell hits you, it burns your nose, eyes, and skin.” [13]

Her respiratory issues have developed into chronic conditions of asthma, and sometimes pneumonia and bronchitis. Now she must use her asthma medication, albuterol sulfate, inhalation solution, (0.083%, 2.5 mg), two to three times a day, and sometimes every four hours. She was going to her doctor so much that at some point, her doctor recommended that she purchase a vaporizer; and have it at her house instead of paying for doctor’s visits. “My allergy doctor said that all this was environmentally related, but the doctor could not actually provide me with a written diagnosis”, she states.

Besides respiratory related issues, her ophthalmologist diagnosed her with pink eye, “...because my eyes get so irritated, one time I even had blood in my eyes”. She adds, “...but I know it is that vapor the facilities are releasing because when I go away for a few weeks to do in-house care or I go away on vacation, almost all of my health issues go away, but the minute I am back, they come back”.

Members of PDC met Drewcillia Wyatt while canvassing her block in mid-November 2013. PDC members consider this engaging woman to be the voice of many Pittsburg residents who are also victims of industrial pollution and suffer environmental health related issues.

Current Pollution

According to the Environmental Protection Agency’s Toxic Release Inventory (TRI) 2012 preliminary data set, the city of Pittsburg (zipcode 94565) has eight active registered stationary sources of pollution.[14] These facilities transferred or released into the air, water and land over 40 different toxic chemicals, totalling almost 100,000 pounds of toxic emissions. 20% of the toxic air emissions consist of cancer causing chemicals.

The TRI may not include all operating facilities due to specific requirements on the amount of emissions released and type of operating facility.

Overburdened Population

Pittsburg is a community intertwined with industry. Industrial facilities can be seen, heard and smelled from parks, homes and children’s schools. Despite industry’s efforts to be a “good neighbor,” these companies are ultimately failing the communities that surround them. Two governmental agencies have determined that Pittsburg’s air quality is one of the worst in the Bay Area, if not the State of California:

- According to the regional environmental regulator, the Bay Area Air Quality Management District (BAAQMD), **Pittsburg is in the top 15% of communities in the Bay Area that are most affected by air pollution**. BAAQMD developed a new statistical measure for determining which communities experience the most direct health impacts from air

pollution, called the Pollution-Vulnerability Index. This index incorporates cancer rates, rates of early death, and increased healthcare costs. Using this method, BAAQMD found that Pittsburg is one of the most impacted communities in the Bay Area.[15]

- Additionally, the California Office of Environmental Health Hazard Assessment found that **central Pittsburg -- the area of the proposed WesPac project -- is in the top 10% of California communities experiencing adverse health effects due to multiple sources of pollution.[16]**

According to the EPA's Plan EJ 2014, the term "overburdened" describes a minority, low income, tribal and indigenous populations or communities in the US that potentially experience disproportionate environmental harms and risk due to exposures or cumulative impacts or greater vulnerability to environmental hazards. This increased vulnerability may be attributed to an accumulation of negative and lack of positive environmental, health, economic, or social conditions within these populations or communities.[17]

In the area for the proposed WesPac Oil Terminal, the community census demographics include 43% Latino population and 24% Black population. Among the community that will be closest to the proposed site, 46% are considered low income.[18] The WesPac project would add additional exposure to this community by increasing air emissions in an already sensitive area. According to comments submitted to the Recirculated Draft Environmental Impact Report by the Natural Resources Defense Council (NRDC):

> "The [Bay Area Air Quality Management] District also concluded in this assessment that the areas, including Pittsburg, with the highest pollution-vulnerability index also tended to have the highest proportion of non-white and lower income residents, creating a serious environmental justice problem. Thus the area is not a suitable location for increased industrial operations and increased air pollution. It is therefore inappropriate that the mitigation offered for operational air emissions that exceed safe thresholds is based entirely on regional emission reduction credits."[19]

Proposed WesPac Project

WesPac Energy, constructor of massive infrastructure projects, has proposed to build an enormous oil storage and transfer facility in Pittsburg. WesPac's oil terminal would bring in up to 10 million gallons of crude oil per day by ship, rail, and expanded pipelines. A new massive rail terminal would accommodate more than 100 tanker cars each day carrying crude oil. WesPac's plan is to build on the somewhat decrepit, and currently decommissioned, PG&E tank "farm" near the Pittsburg waterfront. The company's reason for choosing the site is so they can use the already existing infrastructure of storage tanks, railroad tracks, and pipelines.

The WesPac project is extremely large and clearly incompatible with the nearby residential area. The proposed 125-acre terminal is less than half a mile from downtown Pittsburg, near homes, schools, parks, and the waterfront. Some homes are only 87 feet from the rail terminal site. There is no buffer zone between the industrial and residential areas, and there is no buffer zone between the industrial area and Suisun Bay. According to NRDC's comments to the Recirculated Draft EIR:

> "This project will result in many Pittsburg residents being exposed to unhealthy levels of air pollution. In addition to substantial residential proximity to the proposed project, there are also many sensitive sites within one quarter of a mile of the proposed project including daycare and preschool facilities, schools, parks and churches (St. Peter Martyr School and Extended Care Facility, First Baptist Head Start, Parkside Elementary School, the Stewart Memorial Methodist Church, the First Baptist Church, City Park, Riverview Park and Marina Park)."

The proposed project is so large that it will have the capacity to handle about **half of all the oil currently refined in the Bay Area**. According to a January 15, 2014 letter from the California Attorney General to the City of Pittsburg detailing concerns about the project:

> "The total annual average throughput for the [WesPac] Project will be approximately 88.3 million barrels per year, with a maximum throughput of over *136 million barrels per year*. To put these numbers in context, all the refineries in California currently process well over 700 million barrels of oil annually, with *Bay Area refineries processing 276 million barrels annually*."[20]

The location of the WesPac site also creates the potential for catastrophic consequences in the event of a flood, earthquake and/or oil spill. The site is in both a flood zone and a liquefaction zone. It is also situated along the northern Contra Costa County shoreline, immediately adjacent to Suisun Bay. Suisun Bay is a brackish tidal marsh, considered one of the most diverse and fragile types of ecosystem. The bay is situated in the California Bay Delta, the largest estuary along the west coast of the Americas, where the Sacramento and San Joaquin Rivers meet and flow to the ocean. These rivers provide snowmelt from the Sierras and offer the most precious of all of California's natural resources: water for 25 million residents. Not only would a spill from the WesPac terminal endanger this delicate wildlife area, but it also puts the Bay Area's water supply at unacceptable risk.

Accidents Can and Will Happen

A significant spill could devastate the Bay and the Delta because the dirtier, unconventional crudes, such as tar sands or Bakken Shale crude, are even harder to clean up than regular oil

spills. In the past few years, there have been terrible accidents in Lac-Mégantic, Quebec; Kalamazoo, Michigan; Mayflower, Arkansas; and Casselton, North Dakota, where whole communities had to be evacuated due to the explosive nature of the crude oils transported in rail cars.

Significant oil-by-rail accidents that occurred in 2013:

- Lac-Mégantic, Quebec: A runaway train carrying crude oil crashed into the town of Lac-Mégantic, Quebec in July 2013. Of 72 rail cars, each carrying 30,000 gallons of oil, only 9 cars remained unscathed. The explosion leveled 30 buildings and killed 47 people. According to Catherine Wallace, managing editor of the Montreal Gazette, the disaster raised serious questions "...about railway safety; about the transport of dangerous goods; about how uninformed municipalities are about what passes through their backyards; about U.S. vs. Canadian regulations."

- Casselton, North Dakota: A BNSF train carrying the particularly flammable Bakken light crude collided with another train outside of Casselton, North Dakota in December 2013. A total of 10 rail cars became fully engulfed in flames.

In the Pittsburg area, chemical plant K2 Pure Solutions had two accidents in 2013. According to the Contra Costa Times, "the K2 plant uses the liquefaction unit to provide Dow's Pittsburg operations with chlorine to make crop protection products and other materials. Other areas of the K2 plant are used to produce bleach products used by other customers."[21]

Most recently, on December 4, 2013, K2 Manufacturing had a chlorine leak, causing Contra Costa Health Services to issue a public health advisory. Earlier in 2013, on January 21, they had a leak that caused complaints from local dock workers who required medical attention.[22]

Citizen Air Sampling
Bucket Brigade Projects: A Crucial Piece of the Puzzle

Building a trail of evidence

For an odor or pollution complaint, citizens can call the Bay Area Air Quality Management District and/or the Department of Health depending on the nature of the complaint. Regulatory and environmental agency personnel are not available at all hours to come out during a pollution incident. The agencies are often underfunded and understaffed to send out a staff person or investigator for each complaint. If agency personnel does investigate the complaint, it can take hours, and sometimes days for the in person visit.

Community-based monitoring provides an opportunity for residents to respond immediately to a pollution incident with sampling equipment and to contact agency personnel. Global Community Monitor (GCM) trained members of the Pittsburg Defense Council and other community members to keep a record of pollution incidents. These records include: the location, nature, and duration of the pollution incident; the wind direction, health effects or property damage; and how the incident was addressed (e.g., by a call to the regulatory agency, the company suspected or known to be the source of the pollution, or informative calls to other neighbors).

Pollution incident records are referred to as “pollution logs.” Pollution logs filled out by community members ensure that a record is maintained beyond regular agency business hours. Community members are also encouraged to take pictures and/or use a video camcorder to catch a visual image of the pollution.

Bucket Brigades provide evidence and hard science to support the anecdotal stories of health impacts that all affected communities know too well: strange odors causing nausea, stinging eyes, burning noses, sore throats, coughs, and other distressing health symptoms. Community-based monitoring engages community members in record maintenance, site identification, operation of monitoring equipment, documentation, and custody and shipping of the sample.

The information gathered by Bucket Brigades, combining science with community experience and reports, helps bridge the gap between communities, regulators and industry. Air sampling and monitoring can provide key evidence exposing chemical exposure, can be a tangible way to show that the air pollution has decreased in a community, and can help build relationships where community members coexist with their industrial neighbors.

Pittsburg Community Pollution Logs

Nine pollution logs were recorded for Pittsburg during the sampling period between December 14-31, 2013.

For example, a resident on Blue Heron Drive recorded six days of train-related noise. These incidents included five days of train whistles, one log reported whistles at 2:26 am and 3:11 am, and screeching train cars.

The resident also reported seeing black and white smoke coming from Los Medanos Energy Center on six of nine days (some overlapped with the train whistle, others were separate incidents).

Bucket Brigade Training

To begin a project, GCM conducts a research assessment of toxic hazards in a target community and identifies the appropriate environmental monitoring tools that will assist community members in investigating their health concerns and exposures. GCM reviews the data on pollution sources and toxins and prioritizes the most serious for early action. All Bucket Brigade trainings are conducted onsite, in the local community.

For this project, GCM was given a local tour that included monitoring site assessment by community members in areas near downtown Pittsburg and the waterfront. During the training, GCM provided a day-long classroom training, including background on pollution and environmental health, how to document pollution incidents, hands-on use with the air monitor, and how to use monitoring equipment. GCM also worked with local community members to co-design an environmental sampling plan.

GCM's training and plans emphasize standard scientific methods. Community members learn how the monitoring equipment works, the best time to use it, and the appropriate paperwork to fill out before shipping a sample to the lab. The Bucket Brigade's work is strengthened by following stringent Quality Assurance/Quality Control (QA/QC) protocols and the use of EPA-approved methods at the lab.

Air Monitoring Methods

Particulate Matter (PM) Monitoring Equipment

Various environmental agencies throughout the country recommend that a Mini Vol Portable Air Sampler produced by Airmetrics be employed while monitoring for particulate matter. The Mini Vol provides accurate and precise results, is easy to use, and can be moved from location to location allowing for a broader assessment of how toxic air contaminants might be distributed in the Pittsburg area.

The Mini Vol Portable Air Sampler samples ambient air for particulate matter (PM_{10}, $PM_{2.5}$ or total suspended particulates -TSP) and/or non-reactive gases (CO, NOx). Airmetrics and the US EPA jointly developed the patented low-flow technology used in the Mini Vol. While not a US EPA Federal Reference Method sampler, the Mini Vol provides results that closely approximate reference method data. Affordable and portable, the Mini Vol is ideal for saturation studies, emergency response situations, fugitive emissions, prescribed burning sampling, and urban air quality studies.

The Mini Vol is a pump unit that pulls air through a filter holder assembly, where particle size separation occurs by impaction. The flow of air can be adjusted and, in this case, has been set at five liters per minute. The particulate matter is collected on a 47 millimeter (mm) filter. The

filters are weighed pre and post exposure by a microbalance, accurate to one microgram, to determine the particulate concentration. The Mini Vol does not provide any real-time readout. Samples are sent to a lab that utilizes EPA-approved methods for analysis.

Samples for this report used a variety of standard and accepted methodologies by a certified laboratory for analysis. Particle samples were subjected to analysis for concentrations of $PM_{2.5}$ by pre and post weighing analysis by Chester LabNet in Oregon. In addition, other filter samples were analyzed for concentrations of diesel particulates by NIOSH method 5040 as Elemental Carbon as compared to Organic Carbon (EC/OC).

The Mini Vol features include a seven day/six run programmable timer, an elapsed time meter, low flow and low battery shut-offs, and operation from rechargeable battery packs. The Mini Vol can sample for only one size of particulate at a time and can sample for PM10, $PM_{2.5}$ or TSP depending on the nozzle attachment used.

At the end of a particulate sampling period, the filter holder and battery pack are replaced by a second filter holder and a second battery pack (two of each come standard with a new Mini Vol). Once a sample is collected, the exposed filter is sent to the lab for post-exposure weighing and analysis and a fresh, pre-weighed 47 mm filter is placed into the filter holder for the next sample collection. Recharge of the spent battery is accomplished using a universal transformer connected to a wall circuit. At certain sampling locations electrical power is available and the Mini Vol is simply plugged in during sampling periods.

Prior to leaving the manufacturer, each Mini Vol sampler is calibrated using a Laminar Flow Element and a calibration curve is included with each new sampler. The manufacturer requires an annual re-calibration test to ensure Quality Control/Quality Assurance (QA/QC).

What We Tested For

Particulate Matter ($PM_{2.5}$ and Diesel), according to the US EPA:

> "Particle pollution (also called particulate matter or PM) is the term for a mixture of solid particles and liquid droplets found in the air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others are so small they can only be detected using an electron microscope.
>
> Particle pollution includes "inhalable coarse particles," with diameters larger than 2.5 micrometers and smaller than 10 micrometers and "fine particles," with diameters that are 2.5 micrometers and smaller. Think about a single hair from your head. The average human hair is about 70 micrometers in diameter – making it 30 times larger than the largest fine particle.[23]

Health impacts of fine particle ($PM_{2.5}$) pollution exposure:

- Fine particles are easily inhaled deep into the lungs where they may accumulate, react, be cleared or absorbed.

- Scientific studies have linked particle pollution, especially fine particles, with a series of significant health problems, including:
    - premature death in people with heart or lung disease,
    - nonfatal heart attacks,
    - irregular heartbeat,
    - aggravated asthma,
    - decreased lung function, and
    - increased respiratory symptoms, such as irritation of the airways, coughing or difficulty breathing.

- Particle pollution can cause coughing, wheezing, and decreased lung function even in otherwise healthy children and adults.

- Studies estimate that thousands of elderly people die prematurely each year from exposure to fine particles.

- The average adult breathes 3,000 gallons of air per day.

- According to the American Academy of Pediatrics, children and infants are among the most susceptible to many air pollutants. Children have increased exposure compared with adults because of higher minute ventilation and higher levels of physical activity.

Given the proximity to industrial facilities, railroad lines and the freeway, this pilot study also tested for diesel particulate. According to the Occupational Safety and Health Administration (OSHA),

> "Diesel exhaust is a mixture of gases and particulates produced during the combustion of diesel fuel. The very small particles are known as diesel particulate matter, which consists primarily of solid elemental carbon (EC) cores with organic carbon (OC) compounds adhered to the surfaces. The organic carbon includes polyaromatic hydrocarbons (PAH), some of which cause cancer when tested in animals. Workers exposed to diesel exhaust face the risk of health effects ranging from irritation of the eyes and nose, headaches and nausea, to respiratory disease and lung cancer."

In June 2012, a group of experts from the World Health Organization (WHO) classified diesel engine exhaust as a carcinogen – a substance that causes cancer. The International Agency for Research on Cancer (IARC), which is part of the WHO, based its decision on what it calls "sufficient evidence" that exposure to diesel exhaust causes lung cancer and "limited evidence" that it increases the risk of bladder cancer. The new classification moves diesel fuel from the category of "probably carcinogenic" to "carcinogenic."[24]

What We Tested For

Particulate Matter ($PM_{2.5}$ and Diesel), according to the US EPA:

> "Particle pollution (also called particulate matter or PM) is the term for a mixture of solid particles and liquid droplets found in the air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others are so small they can only be detected using an electron microscope.

Air Monitoring Results

Pittsburg Defense Council conducted 10 air samples between December 14-31, 2013 in and around Pittsburg, California.

Five (5) of the samples were analyzed for levels of very fine particulate matter ($PM_{2.5}$); the other five (5) samples were analyzed for levels of elemental carbon (EC) and organic carbon (OC). EC sampling is a regular practice and indicator for diesel particulate.

According to Dr. Mark Chernaik with Science for Citizens, "This dataset has some of the highest levels of very fine particulate matter ($PM_{2.5}$) I have seen in filtered air samples collected in the United States. Four of the five air samples contained $PM_{2.5}$ exceeding the United States Environmental Protection Agency (US EPA) 24-hour (short-term) National Ambient Air Quality Standard of 35 $\mu g/m^3$. Overall, $PM_{2.5}$ averaged 37.3 $\mu g/m^3$, well above the US EPA annual (long-term) National Ambient Air Quality Standard of 12.0 $\mu g/m^3$." [25]

The United States Environmental Protection Agency (U.S. EPA) categorizes air quality using an index based on 24-hour average levels of $PM_{2.5}$. This index was revised as recently as December 14th, 2012, and the $PM_{2.5}$ levels associated with air quality categories is presented in the chart below.[26]

The $PM_{2.5}$ level of 58.8 $\mu g/m^3$ collected at Pittsburg High School on December 16th-17th, dates when school was in session and students were exposed to these levels of pollutants, should be considered as "Unhealthy: Everyone may begin to experience some adverse health effects, and members of the sensitive groups may experience more serious effects." The other four $PM_{2.5}$ level should be considered as "unhealthy for sensitive groups: ... persons with heart and lung disease, older adults and children are at greater risk from the presence of particles in the air."

Dr. Chernaik continued, "With respect to the EC levels: This dataset has the highest levels of elemental carbon (EC) I have observed in filtered air samples collected in the United States (e.g. higher, on average, than in samples I have interpreted from Galena Park, Texas; Rensselaer, New York; Lebec, California; Arvin, California; Wilmington, Delaware; and Engelwood, Illinois).

- When 24-hour EC levels at a location are above 1.36 $\mu g/m^3$, then they are high enough to be associated with an excess risk of cardiovascular mortality two and three days post-exposure.

- When 24-hour EC levels at a location are above 0.838 $\mu g/m^3$, then they are high enough to be associated with an excess risk of cardiovascular and respiratory hospitalizations on the day of exposure

All five of the filtered air samples analyzed contained EC levels high enough to be associated

with these health risks.

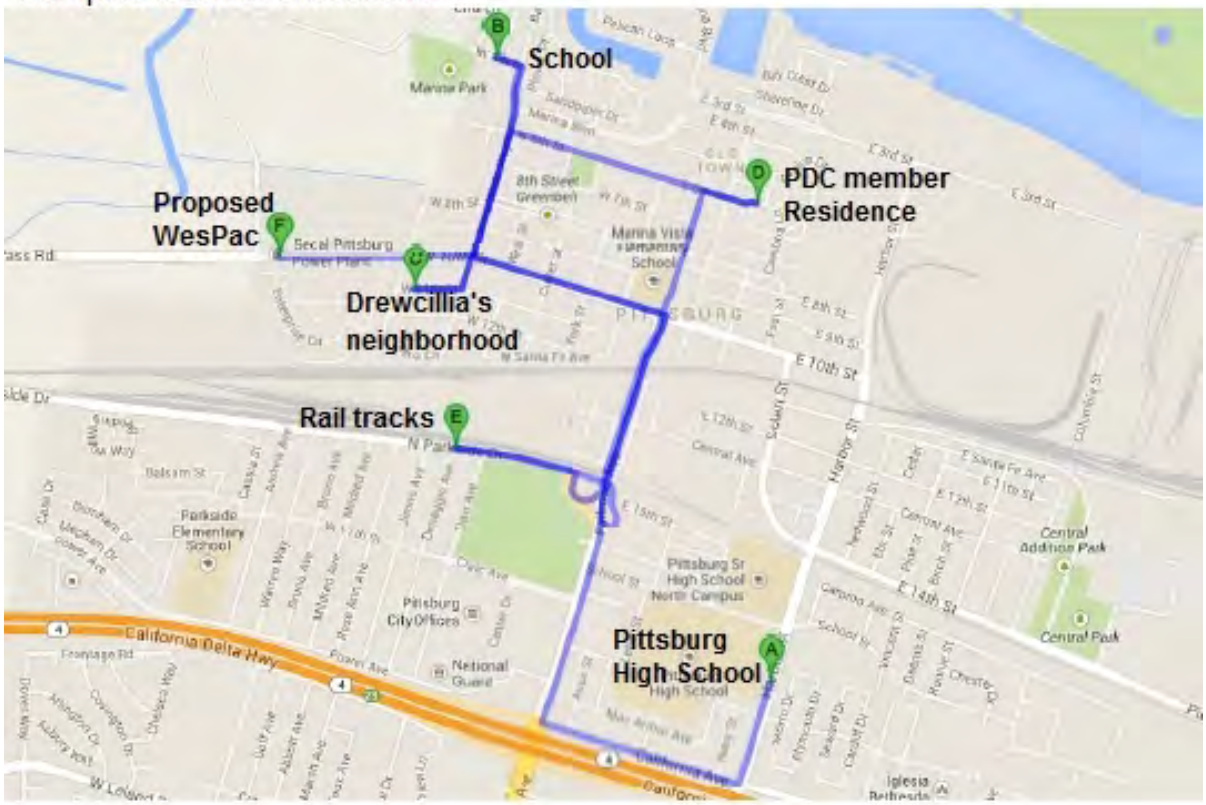
The Bay Area Air Quality Management District (BAAQMD) ceased monitoring air quality in Pittsburg at the end of 2008, when the Pittsburg air monitoring station was closed. New construction in the area and a large increase in the lease cost made this closure necessary. According to the BAAQMD:

> Pollution levels in Pittsburg have been found to be lower than nearby sites in Concord, Fairfield and Bethel Island. The national 8-hour ozone and the State 24-hour PM10 standards were exceeded within the most recent 5 years at Pittsburg, but pollutant levels are lower than nearby stations.[27]

In comparing the Pittsburg dataset to $PM_{2.5}$ levels the BAAQMD found at the nearby Concord, ambient air quality monitoring station,[28] $PM_{2.5}$ levels at the nearby Concord station were moderately high. These levels were not at all representative of air quality found by the Pittsburg Defense Council Bucket Brigade on identical days in Pittsburgh. Therefore, the Pittsburg Defense Council Bucket Brigade data from December 2013 makes a compelling argument to reopen the Pittsburg air monitoring station that was closed at the end of 2008.

In the chart below, AIRNow Air Quality Index graph shows the ranges from good to hazardous air quality. The $PM_{2.5}$ data from Pittsburg would fall under “unhealthy for sensitive groups” (orange) and “unhealthy” (red).

Pittsburg Defense Council
Samples taken at 5 locations



The revised AQI breakpoints are outlined in the table below:

AQI Category	Index Values	Previous Breakpoints (1999 AQI) ($\mu g/m^3$, 24-hour average)	Revised Breakpoints ($\mu g/m^3$, 24-hour average)
Good	0 - 50	0.0 - 15.0	0.0 – 12.0
Moderate	51 - 100	>15.0 - 40	12.1 – 35.4
Unhealthy for Sensitive Groups	101 – 150	>40 – 65	35.5 – 55.4
Unhealthy	151 – 200	> 65 – 150	55.5 – 150.4
Very Unhealthy	201 – 300	> 150 – 250	150.5 – 250.4
Hazardous	301 – 400	> 250 – 350	250.5 – 350.4
	401 – 500	> 350 – 500	350.5 – 500

Pittsburg Defense Council

Interpretation of PM2.5 and EC levels in air samples

By Mark Chernaik, Science for Citizens

10-Jan-14

Lab ID	Pittsburg Locations	Sampling Dates	Field Notes	PM2.5	Elemental Carbon	TC	Average PM2.5 at Concord BAAQMD station
13-T4708	Pittsburg High School	12/16/13 - 12/17/13	Clear	58.5	NA	NA	14.0
13-U1491	Pittsburg High School	12/17/13 - 12/18/13	Partly cloudy	NA	1.602	11.83	29.6
13-T4709	420 W. 4th Street	12/23/13 - 12/24/13	Sunny, no clouds	37.1	NA	NA	24.3
13-U1488	420 W. 4th Street	12/22/13 - 12/23/13	Sunny, no clouds	NA	1.521	15.21	20.0
13-T4710	478 11th Street	12/24/13 - 12/25/13	Sunny, no clouds, haze	37.0	NA	NA	14.3
13-U1489	478 11th Street	12/25/13 - 12/26/13	Sunny, no clouds, haze	NA	1.818	15.33	18.4
13-T4711	267 Pebble Beach Loop	12/28/13 - 12/29/13	Sunny, no clouds	10.2	NA	NA	7.7
13-U1492	267 Pebble Beach Loop	12/27/13 - 12/28/13	Sunny, no clouds	NA	1.416	10.92	18.0
13-T4712	Parkside Dr. & Dimaggio	12/30/13 - 12/31/13	Sunny, no clouds	43.9	NA	NA	26.3
13-U1490	Parkside Dr. & Dimaggio	12/29/13 - 12/30/13	Sunny, no clouds	NA	1.593	13.77	8.5
Average				**37.3**	**1.59**	**13.41**	**18.11**
	Health-based standards		EPA 24-hour standard	35.0	1.36 [FN 1]		35.0
			WHO 24-hour standard	25.0	0.836 [FN 2]		25.0
			EPA annual standard (see	12.0			12.0
			WHO annual standard	10.0			10.0
					FN1	excess risk of cardiovascular mortality two and three-days post exposure	
					FN2	excess risk of cardiovascular and respiratory hospitalizations on the day of exposure	

Recommendations

City of Pittsburg: Reject the WesPac Proposal

Pittsburg Defense Council stands with thousands of Pittsburg residents and neighbors from surrounding areas that the threats to public health, safety, air and water quality in the proposed WesPac project are beyond unacceptable. Pittsburg Defense Council insists and demands that city council of Pittsburg reject this unsafe and unhealthy project.

BAAQMD: Re-Install Air Monitors

The Pittsburg air monitoring station was closed at the end of 2008. $PM_{2.5}$ levels in Pittsburg showed a higher rate of exposure when compared to the nearby BAAQMD ambient air quality monitor in Concord. Therefore, the Pittsburg Defense Council Bucket Brigade data from December 2013 makes a compelling argument to reopen the Pittsburg air monitoring station that was closed at the end of 2008.

BAAQMD: Designate Pittsburg as a CARE Community

The Community Air Risk Evaluation (CARE) program was initiated by Bay Area Air Quality Management District (BAAQMD) in 2004 to evaluate and reduce health risks associated with exposures to outdoor toxic air contaminants (TACs) in the Bay Area. According to the agency website:

> "the program examines toxic air contaminants emissions from point sources, area sources and on-road and off-road mobile sources co-located with sensitive populations to help focus mitigation strategies. Starting in 2009, the CARE program began also evaluating exposures to fine particulate matter (PM) and helping to craft mitigations to reduce these exposures to address the growing evidence that exposure to fine particles has serious health effects." [29]

Pittsburg Defense Council supports the work being done by non-governmental organizations and allies to designate Pittsburg as CARE community.

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