

ENVIRONMENTAL JUSTICE:

Air Pollution in San Diego County

Office of Environmental Justice

April 4, 2023



Overview

- Who regulates air pollution?
- What is air pollution?
- How does air pollution impact my health?
- What are the main types of air pollution in San Diego County?
- What is air quality?
- How can you improve your air quality?
- Where can you report air quality concerns?



Agencies that Regulate Air Pollution



Federal



State



Local



Federal (EPA): Monitors any mobile source crossing state lines.

State (CARB): Monitors any mobile source within the state.

Local (SDAPCD): Monitors any mobile source within the local boundary.



Clean Air Programs

E-Bike & E-Car Rebate:

- [Register \(site.com\)](#)
- www.sdcc4a.org

E-Landscaping Incentive:

- [ELEAF \(sdapcd.org\)](http://sdapcd.org)

Air Purifier:

- <https://www.environmentalhealth.org/campaigns/pair-program/>

Plant a Tree:

- [Free Tree SD | City of San Diego Official Website](#)
- [SDG&E Community Tree Rebate Program for Residential Customers | San Diego Gas & Electric \(sdge.com\)](#)



What is Air Pollution?

Air pollution consists of **chemicals or particles in the air** that can harm the health of humans, animals, and plants. (National Geographic)

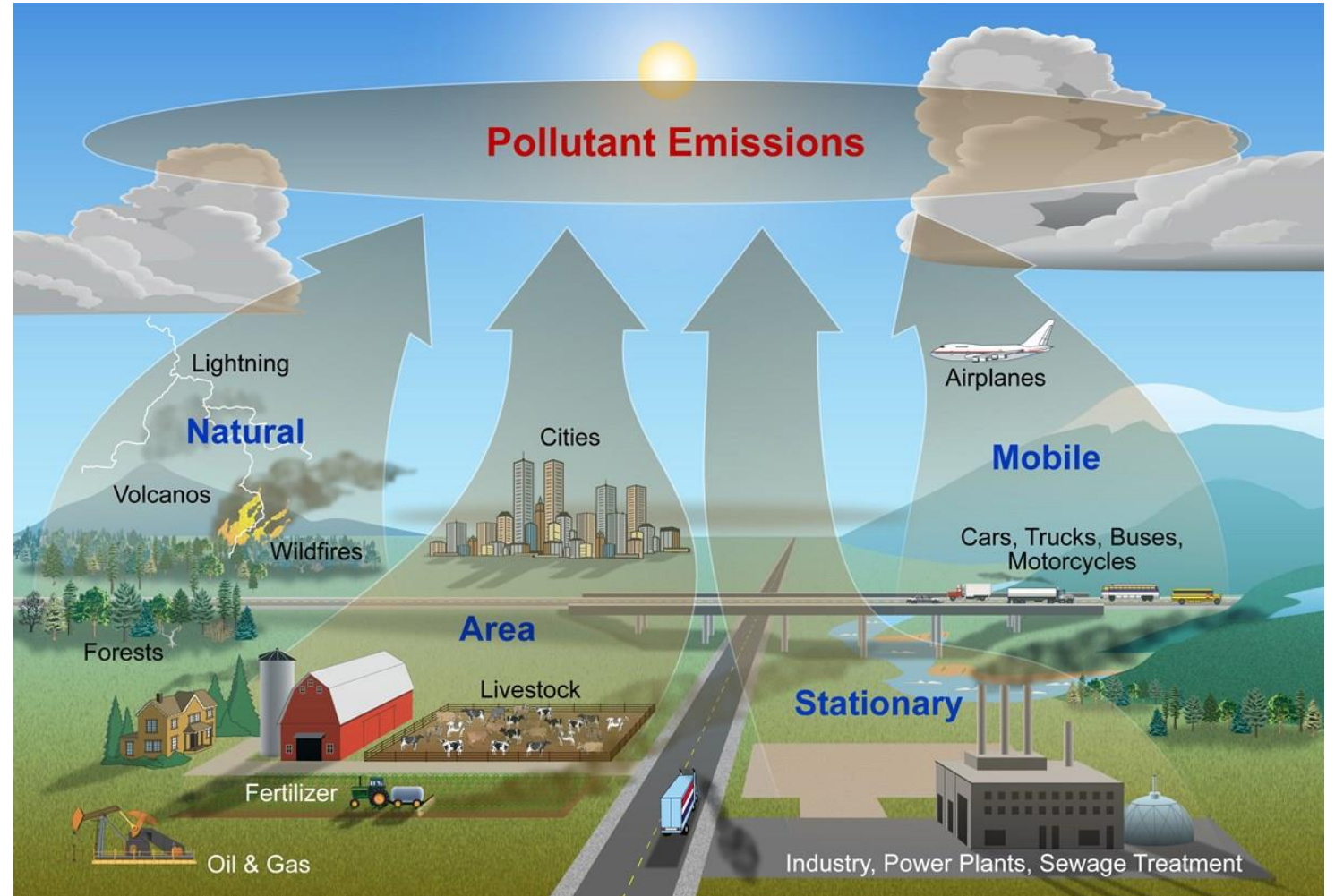


Image: National Park Service



Particulate Matter

What is Particulate Matter?

- PM stands for particulate matter (also called particle pollution): the term for a mixture of solid particles and liquid droplets found in the air. (EPA)
- Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. (EPA)

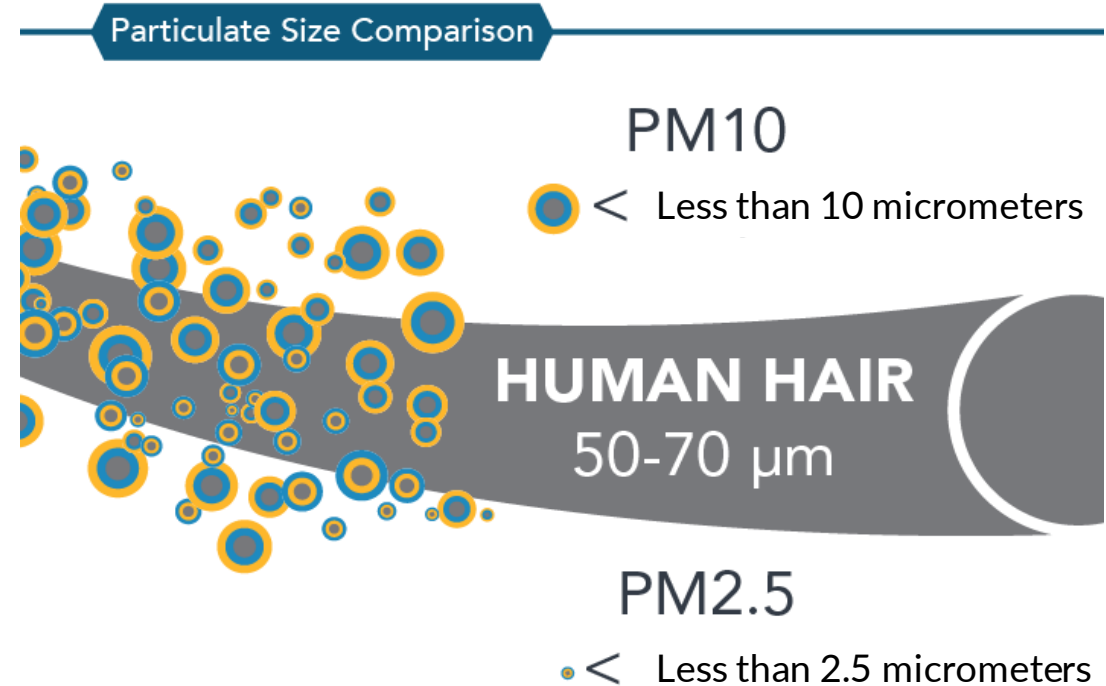
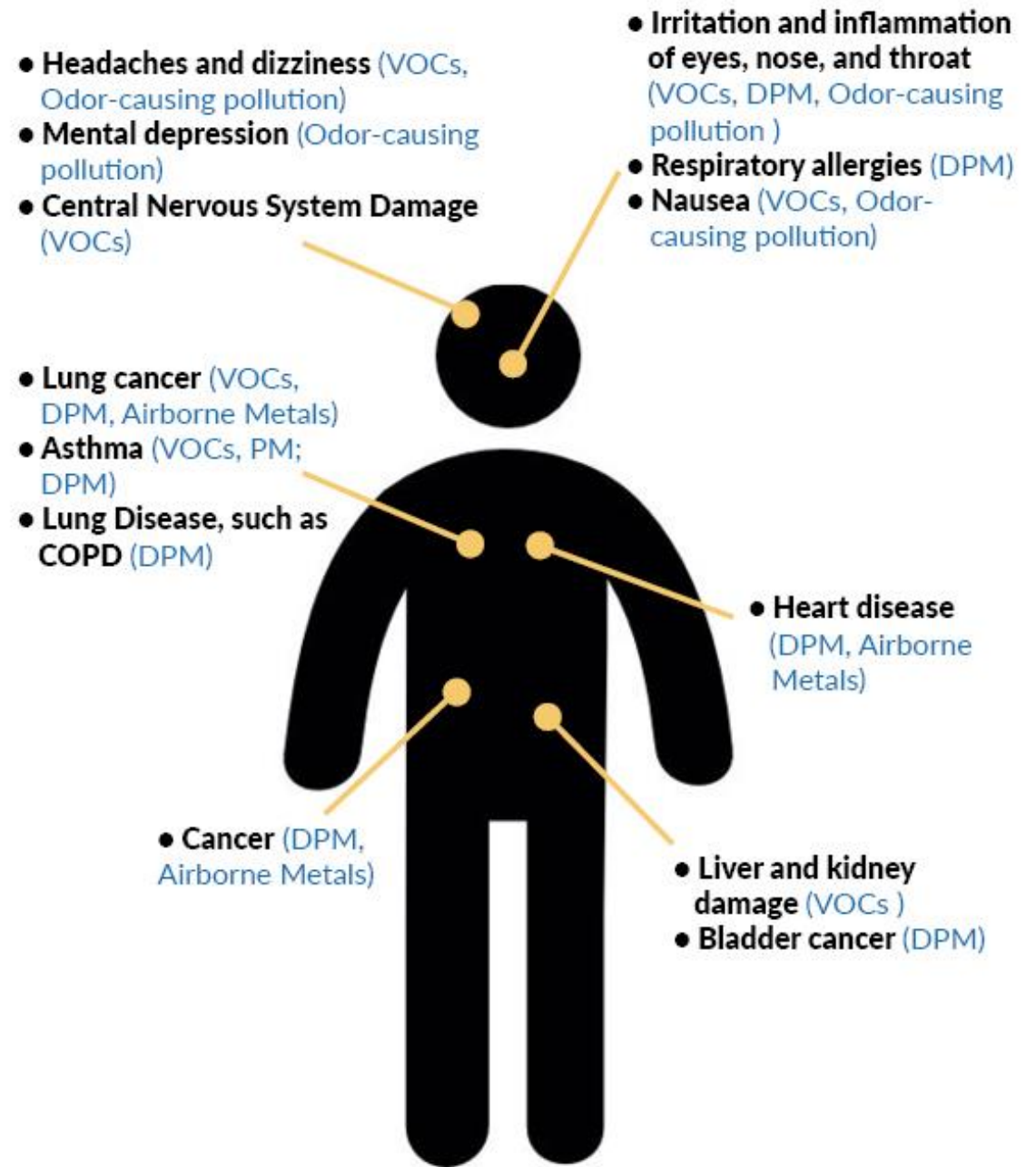


Image: CARB



Health Impacts of Air Pollution



Particulate Matter

PM₁₀ describes inhalable particles, with diameters that are generally 10 micrometers and smaller (EPA). Fine particulate matter is defined as particles that are 2.5 microns or less in diameter (PM_{2.5}). Therefore, PM_{2.5} comprises a portion of PM₁₀.

Community Health Effects

- Reduced lung function;
- Worsening of asthma and other respiratory diseases;
- Increased hospitalization and emergency department visits;
- Faster disease progression; and
- Reduced life expectancy. (CARB)
- Premature death in people with heart or lung disease
- Nonfatal heart attacks
- Irregular heartbeat
- Increased respiratory symptoms, such as irritation of the airways, coughing or difficulty breathing.

Plant & Animal Health

- making lakes and streams acidic
- changing the nutrient balance in coastal waters and large river basins
- depleting the nutrients in soil
- damaging sensitive forests and farm crops
- affecting the diversity of ecosystems
- contributing to acid rain effects.(EPA)



Sources: Pollen, sea spray and wind-blown dust from erosion, agricultural spaces, roadways and mining operations. (WHO)
Primary sources (e.g., combustion of fuels in power generation facilities, industries or vehicles)
Secondary sources (e.g., chemical reactions between gases (WHO)



Diesel Particulate Matter

Diesel engines emit a complex mixture of air pollutants, including both gaseous and solid material. The solid material in diesel exhaust is known as diesel particulate matter (DPM). More than 90% of DPM is less than 1 μm in diameter, and thus is a subset of particulate matter less than 2.5 microns in diameter (PM_{2.5}). (CARB)

Community Health Effects

- Irritation of the eyes and nose
- Headaches and nausea
- Respiratory disease
- Lung cancer (OSHA)

Plant & Animal Health

- Animals develop lung tumors (Ping & Guang, 2017)
- Changing the nutrient balance in coastal waters and large river basins
- Depleting the nutrients in soil
- Damaging sensitive forests and farm crops (EPA)
- Heart damage (JABFM)



Sources: Exhaust from trucks, buses, trains, ships, and other equipment with diesel engines contains a mixture of gases and solid particles. (OEHHA)



Hydrogen Sulfide

Hydrogen sulfide (H₂S) is a colorless gas with a strong odor of rotten eggs. (CDC)

Health Effects

- Eye irritation
- Nose irritation
- Throat irritation
- Difficulty breathing in people with asthma
- Headaches
- Poor memory
- Tiredness
- Balance problems (CDC)

Plant & Animal Health

- Disrupt plant growth and damages plant cells (NIH)
- Damages animal organs
- Creates respiratory irritation
- Can be deadly (Merck Vet)



Sources: Wastewater treatment facilities, swamps, bogs, landfills, petroleum refineries, natural gas plants, kraft paper mills, mines, manure treatment facilities, and hot springs (CDC, Health NY State)



Ozone

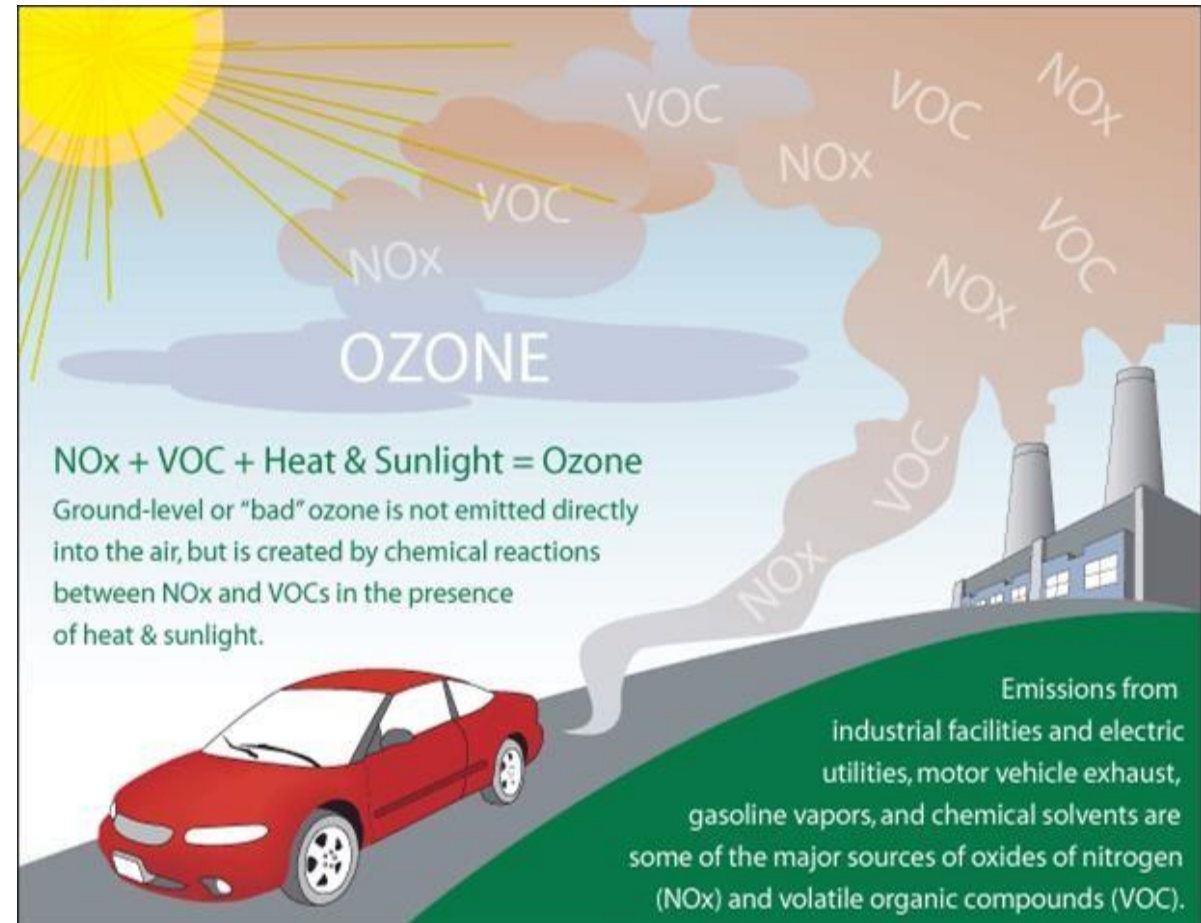
Ozone (O₃) is a highly reactive gas composed of three oxygen atoms. It is both a natural and a man-made product that occurs in the Earth's upper atmosphere (the stratosphere) and lower atmosphere (the troposphere). (EPA)

Health Effects

- Cause coughing and sore or scratchy throat.
- Make it more difficult to breathe deeply and vigorously and cause pain when taking a deep breath.
- Inflammation and damage the airways.
- Make the lungs more susceptible to infection.
- Aggravate lung diseases such as asthma, emphysema, and chronic bronchitis.
- Increase the frequency of asthma attacks. (EPA)

Plant and Animal Health

- Reduce plant growth
- Increase plant and animal risk of disease
- Contributes to animal die offs
- Reduces the production of roots, seeds, fruit (CARB)



Sources: Cars, power plants, industrial boilers, refineries, chemical plants, and other sources chemically react in the presence of sunlight. (EPA)



Volatile Organic Compounds

Volatile organic compounds (VOCs) are emitted as gases from certain solids or liquids.

Health Effects

- Eye irritation
- Nose and throat discomfort
- Headache
- Allergic skin reaction
- Shortness of breath
- Nausea
- Vomiting
- Nosebleed
- Fatigue
- Dizziness (EPA)

Plant and Animal Health

- Disrupt plant growth and damages plant cells (NIH)
- Reduces photosynthesis (Mangotra & Singh, 2024)
- Negative effects on animals' liver, kidneys, and nervous system (Health NY)
- Causes cancer in animals (EPA)



Sources: Paints, paint strippers and other solvents, wood preservatives, aerosol sprays, cleansers and disinfectant, moth repellents and air fresheners, stored fuels and automotive products, hobby supplies, dry-cleaned clothing, and pesticide



Air Quality

What is it?

How does it impact our health?

What can we do to improve it?



What is Air Quality?

- Air quality is a measure of how clean or polluted the air is. (NOAA)

**AIR QUALITY
GOES UP**

**WHEN
POLLUTION
GOES DOWN**



What is the Air Quality Index (AQI?)

AQI Basics for Ozone and Particle Pollution			
Daily AQI Color	Levels of Concern	Values of Index	Description of Air Quality
Green	Good	0 to 50	Air quality is satisfactory, and air pollution poses little or no risk.
Yellow	Moderate	51 to 100	Air quality is acceptable. However, there may be a risk for some people, particularly those who are unusually sensitive to air pollution.
Orange	Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is less likely to be affected.
Red	Unhealthy	151 to 200	Some members of the general public may experience health effects; members of sensitive groups may experience more serious health effects.
Purple	Very Unhealthy	201 to 300	Health alert: The risk of health effects is increased for everyone.
Maroon	Hazardous	301 and higher	Health warning of emergency conditions: everyone is more likely to be affected.



SDAPCD AQI Website

Current San Diego County Air Quality Conditions

Alpine	■	Downtown	■	Escondido	■	Oceanside	■
Chula Vista	■	El Cajon	■	Kearny Mesa	■	Otay Mesa	■

Enter your zip code to highlight the air quality nearest to you

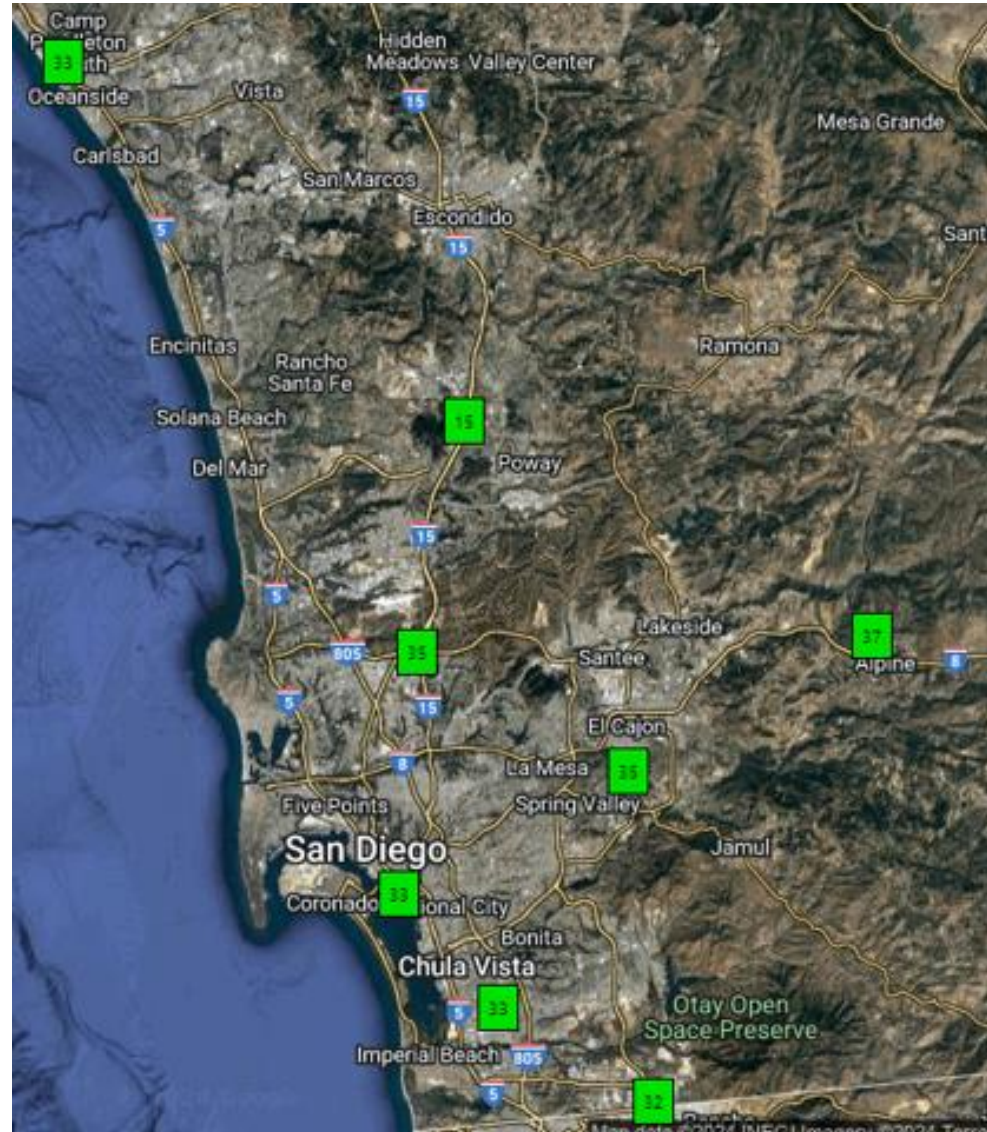
■ 0-50 Good	■ 101-150 Unhealthy for Sensitive Groups	■ 201-300 Very Unhealthy
■ 51-100 Moderate	■ 151-200 Unhealthy	■ 301-500 Hazardous



Where are SDAPCD Monitoring Stations?

8 Locations:

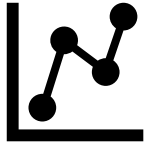
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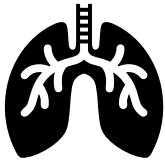
What can I do to improve air quality in my home and community?



Report Air Quality Concerns to SDAPCD



Check Daily Air Quality Index (AQI) and make decisions about activities (i.e., avoid outdoor activities and shut windows when air quality is poor, etc.)



Install air purifiers or high-quality air filters on heating/cooling systems



Advocate for policies and planning that supports cleaner air (i.e., more transit, not allowing industry-related uses near homes and schools, etc.)



Report Air Quality Concerns



(858) 586-2650



apcdcomp@sdapcd.org



- Asbestos
- Dust
- Gasoline Facilities
- Idling
- Odors
- Open Burn
- Smoke
- Unpermitted Operations

