

# **Air Quality in San Diego County**

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**2007 Annual Report**

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# What is Air Pollution?

Air pollution is a general term used to describe undesirable amounts of particulate or gaseous substances in the atmosphere.

There are basically two types of pollutants – criteria air pollutants and toxic air contaminants.

## Criteria Air Pollutants

These pollutants are those for which acceptable levels of exposure can be determined. They are regulated by developing health-based criteria that are used to establish clean air standards, which specify the maximum level of a given air pollutant that can safely exist in the outdoor air. Both the State and federal governments have established these health-protective limits.

Criteria pollutants nationwide include ozone (smog), carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, and inhalable particulates (those smaller than 10 microns are commonly called PM<sub>10</sub> and fine particles 2.5 microns or smaller are called PM<sub>2.5</sub>). California also adds sulfates, visibility-reducing particulates, and hydrogen sulfide.

An area is designated *in attainment* for a specific criteria pollutant when it is in compliance with an air quality standard for that pollutant. An area that doesn't meet the standard is called a nonattainment area.

San Diego County reached a major milestone when it was redesignated in 2003 as an attainment

area for the federal one-hour ozone standard prior to that standard being revoked in 2005. The region still has not met the more restrictive State one-hour standard, although the number of days when the standard is exceeded has declined.

San Diego also does not meet the federal or State eight-hour ozone standards, which are based on a continuous eight-hour average.

The federal Clean Air Act directs the U. S. Environmental Protection Agency (EPA) to review air quality standards every five years using the latest scientific information. In 2006, the EPA tightened its 24-hour PM<sub>2.5</sub> standard from 65 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) to 35  $\mu\text{g}/\text{m}^3$  but did not change its annual PM<sub>2.5</sub> standard. The EPA also decided to retain its existing 24-hour PM<sub>10</sub> standard, but it revoked the annual PM<sub>10</sub> standard, because available evidence does not suggest a link between long-term exposure to PM<sub>10</sub> and health problems.

San Diego meets the federal PM<sub>10</sub> and PM<sub>2.5</sub> standards; however, the area was designated “unclassifiable” for PM<sub>10</sub> before monitoring data were available to show the area is in attainment for the standard. The region was designated in attainment for the PM<sub>2.5</sub> standard in 2005.

San Diego does not meet the stringent State PM<sub>10</sub> standard, which is not met anywhere in California except for northern Lake County, nor the State PM<sub>2.5</sub> standard.

Both State and federal standards for carbon monoxide, nitrogen dioxide, sulfur dioxide, and lead have been met.

## Toxic Air Contaminants

Toxic air pollutants are those that are known or suspected to cause cancer or other serious health effects. Air toxics may produce health effects at extremely low levels, and some may accumulate in the body from repeated exposures. There are hundreds of compounds that are air toxics.

There are no clean air standards for toxic air contaminants because there are no health-based, acceptable levels of exposure.

## Air Quality Designations for the San Diego Air Basin

	<b>Federal</b>	<b>State</b>
Ozone (one-hour)	Attainment	Nonattainment
Ozone (eight-hour)	Nonattainment	Nonattainment
Carbon Monoxide	Attainment	Attainment
PM <sub>10</sub>	Unclassifiable	Nonattainment
PM <sub>2.5</sub>	Attainment	Nonattainment
Nitrogen Dioxide	Attainment	Attainment
Sulfur Dioxide	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	(no federal standard)	Attainment
Hydrogen Sulfide	(no federal standard)	Unclassified
Visibility	(no federal standard)	Unclassified

# Air Quality in 2007

The devastating wildfires in late October 2007 adversely impacted air quality throughout the San Diego Air Basin. A blanket of smoke engulfed the region and many air quality monitoring sites recorded high levels of inhalable fine particulates.

The region's Air Quality Index (see page 8) soared to **"very unhealthy"** on one day, **"unhealthy"** on five days, and **"unhealthy for sensitive groups"** on 14 days.

A basinwide PM<sub>10</sub> high of more than 500 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) was recorded in Escondido. The federal PM<sub>2.5</sub> clean air standard ( $35 \mu\text{g}/\text{m}^3$ ) was exceeded 22 times as recorded at five different sites from the onset

of the fires through complete control. Burning coastal sage scrub, trees, and structures released toxic compounds; and incomplete combustion produced large quantities of carbon monoxide and oxides of nitrogen. The oxides of nitrogen reacting with hydrocarbons increased ozone levels.

As with the 2003 Cedar Fire, accumulated ash and strong winds contributed to elevated particulate levels for many weeks following the initial burn.

Prior to the fall 2007 firestorm, the summer smog (ozone) season saw ozone levels decline except for a very warm Saturday over Labor Day weekend in Alpine. On September 1, ozone levels

reached 13.4 parts per hundred million (pphm) – the highest concentration in six years. This one day serves as a reminder that air quality improvements cannot be taken for granted.

Ozone concentrations have declined significantly during the past 20 years, and the number of days each year that the air basin exceeds the State and federal standards has also decreased.

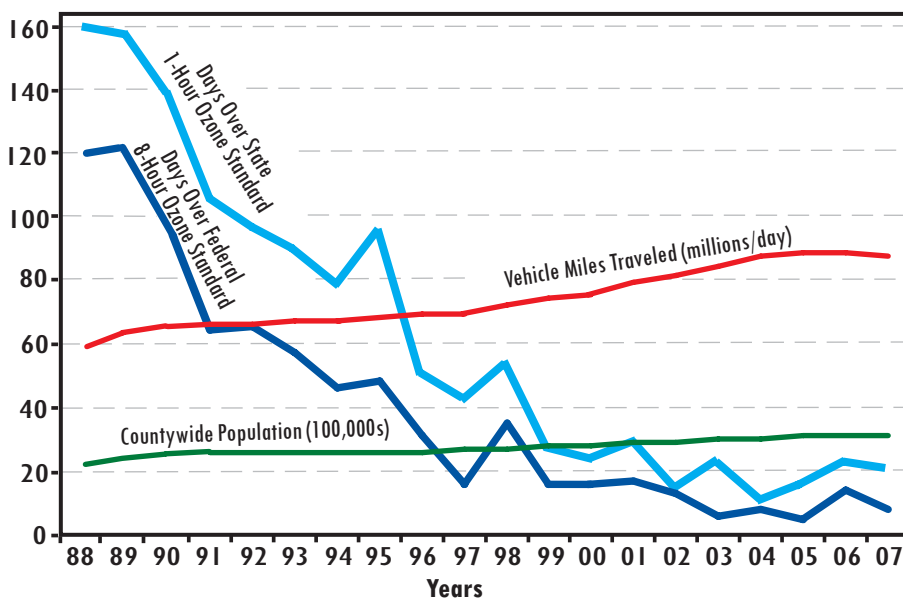
In addition, the San Diego Air Basin has not recorded a Stage I ozone episode (commonly called a smog alert) since 1991 nor a Stage II episode since 1979. A Stage I occurs when ozone levels reach 20 pphm and a Stage II alert is called at 35 pphm.

The last health advisory for smog occurred in July 1998. A health advisory is issued when ozone levels reach 15 pphm.

Except for during the wildfires of October 2003 and 2007, particulate matter levels have also improved – the annual average declining 25% since 1986, the earliest year with comparable particulate data. This is in part due to reductions in emissions of ozone precursors, which also contribute to the formation of fine particulates.

Also, local emissions of toxic air contaminants from industrial sources have decreased about 82% since 1989 (the year when toxic air contaminant data became available).

## Smog Levels Down Despite Growth



San Diego's decline in the number of days with unhealthy amounts of ground-level ozone (smog) despite the region's growth in population and vehicle miles traveled demonstrates that programs to reduce air pollution are working.

# Ozone (Smog)

San Diego County has made great progress in overcoming what historically has been the region's primary air pollution problem - ozone. Monitoring data clearly shows a continuing downward trend with an occasional peak primarily due to meteorological influences.

The region achieved an important goal when it met the former federal one-hour ozone standard in 2001 and was redesignated in 2003 as an attainment area before that standard was revoked in June 2005.

For more than 20 years, the federal standard was 12 parts

air (12 pphm) for one hour. In 1997, however, the eight-hour standard of 8 pphm was introduced after research revealed that longer-term exposures at lower ozone levels caused significant health effects.

It is anticipated that the U. S. Environmental Protection Agency will strengthen its ozone standard again in 2008.

California's ozone standards have always been more stringent than the federal standards. The State one-hour ozone standard is 9 pphm, and the State eight-hour standard, which became effective in 2006, is 7 pphm. The State eight-hour standard is the

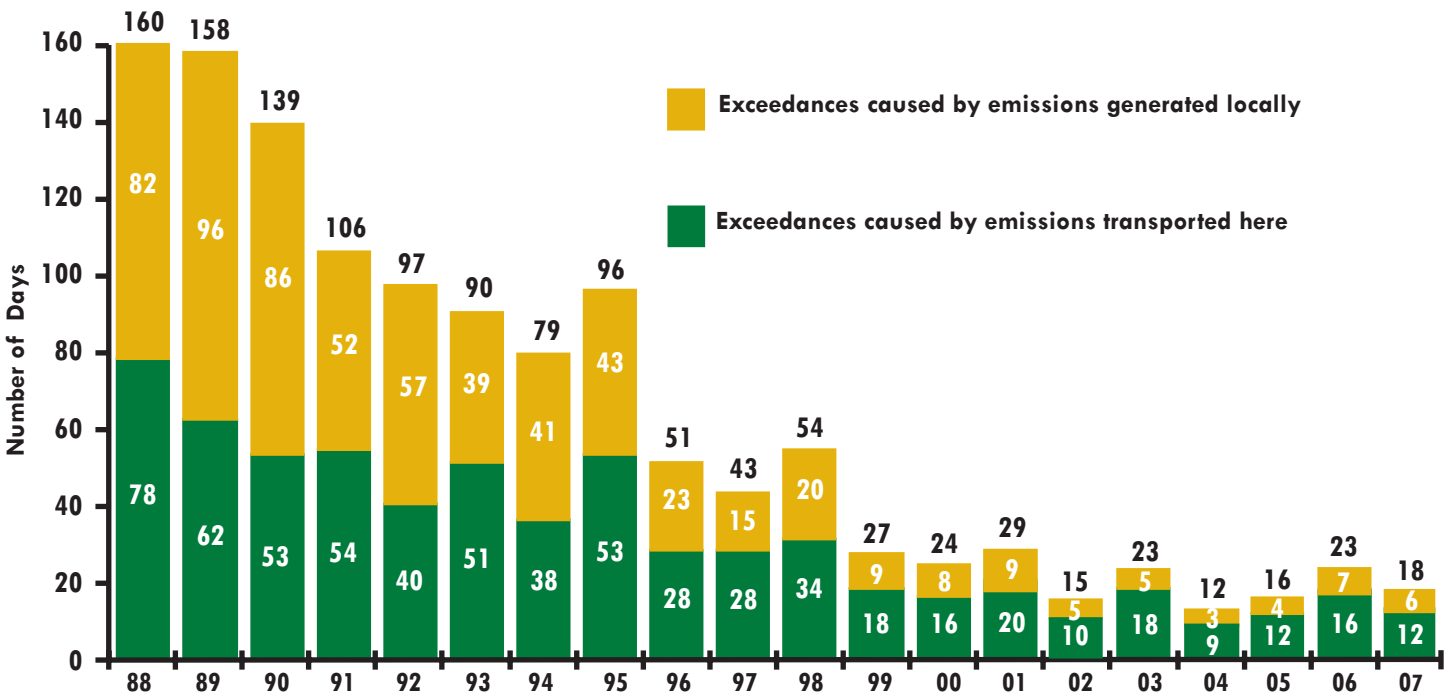
nation's most health protective ozone standard with special consideration for children's health.

A colorless gas composed of three oxygen atoms, ozone can be good or bad depending on where in the atmosphere it is located.

Ozone occurs naturally in the Earth's upper atmosphere where it creates a protective layer, shielding all life from the sun's harmful ultraviolet radiation. International efforts are well underway to protect this beneficial ozone threatened by man-made chemicals.

However, ozone in the Earth's lower atmosphere, near ground level, is unhealthy to breathe.

## Number of Days Exceeding State One-Hour Ozone Standard



Not all of the pollution in San Diego County is generated here. Winds frequently transport emissions from the South Coast Air Basin that increase the ozone measured at San Diego monitoring sites, leading to exceedances of the standards.

## Ozone\*

Monitoring Site (1/1/07-12/31/07 <sup>1</sup> )	Number of Days Exceeding Federal Standard 8-Hour Concentration 8 pphm	Number of Days Exceeding State Standard 8-Hour Concentration 7 pphm	Maximum 8-Hour Concentration (pphm)	Date of Maximum 8-Hour Concentration	Number of Days Exceeding Former Federal Standard** 1-Hour Concentration 12 pphm	Number of Days Exceeding State Standard 1-Hour Concentration 9 pphm	Maximum 1-Hour Concentration (pphm)	Date of Maximum 1-Hour Concentration
Chula Vista	1	2	8.7	May 8	0	1	10.5	May 8
El Cajon	0	3	8.2	Sept. 1	0	2	11.0	Sept. 1
Kearny Mesa	0	4	7.6	May 8	0	0	8.8	March 16
Del Mar	0	3	7.9	May 8	0	0	8.6	May 8
Escondido	0	5	7.7	Sept. 1	0	0	9.4	Aug. 31
Alpine	6	42	9.2	Sept. 2	1	17	13.4	Sept. 1
Downtown San Diego	0	0	6.5	March 16	0	0	8.7	Oct. 19
Camp Pendleton	0	4	7.4	May 18	0	0	8.3	March 16
Otay Mesa	0	1	7.2	Sept. 2	0	0	9.2	Sept. 2
Basinwide	7	43			1	18		

\*Ozone data during the wildfires (October 21-28, 2007) is not included in this table. (See page 6.)

\*\*Although the federal 1-hour ozone standard was revoked on June 15, 2005, it is included in this table for comparison purposes to previous years.

Ozone (or O<sub>3</sub>) is a strong irritant that can restrict airways, resulting in difficulty breathing and forcing the respiratory and cardiovascular systems to work harder in order to provide oxygen. It can also inflame and damage the lining of the lungs.

Ozone is not directly emitted at ground level but rather is formed in the lower atmosphere when precursor emissions (oxides of nitrogen and hydrocarbons) react in the presence of sunlight.

Meteorology and terrain play major roles in ozone formation. As a rule, low wind speeds or stagnant air coupled with warm temperatures and cloudless skies provide for optimum conditions. Summer, therefore, is generally considered the smog season.

The monitoring site reporting the greatest number of days when ozone levels exceeded the clean air standards is located in Alpine. Situated about 2,000 feet above sea level, the Alpine site reflects smog levels for the lower mountain slopes that are downwind of the dense urban areas of San Diego.

Smog-forming emissions are generated in the populated coastal plain and are blown inland by the onshore breeze. These emissions react with the area's abundant sunshine to create ozone that can become trapped against the mountain slopes by a temperature inversion layer.

San Diego's temperature inversion occurs when warm, dry air overlies the cool, moist marine air. Frequently hovering about 2,000 feet above sea level, this inversion does not allow emissions

to disperse into the air above the inversion layer, keeping pollutants below the inversion layer at higher concentrations.

San Diego's smog levels can also be impacted by ozone and emissions transported here from the South Coast Air Basin (the metropolitan areas of Los Angeles, Orange, Riverside, and San Bernardino Counties). These emissions often increase the ozone measured at San Diego monitoring sites, leading to exceedances of air quality standards.



*The foothills east of the dense urban areas of San Diego often experience the highest levels of ozone (smog). Peak ozone concentrations often occur far downwind of the precursor emissions.*

# Particulates

Although all airborne particles can pose health problems, the greatest concern is for microscopic particles that are 10 microns or less in diameter that, when inhaled, can bypass the respiratory tract's natural filtering system. Inhalable particulates that are smaller than 10 microns are called PM<sub>10</sub> and those 2.5 microns or smaller are called PM<sub>2.5</sub>.

The size of the particles is directly related to their potential for causing health problems. Particles 2.5 to 10 microns in diameter tend to collect in the upper portion of the lungs while those 2.5 microns or less can penetrate deeper and damage lung tissue. Exposure to these microscopic particles can increase the number and severity of asthma attacks, aggravate bronchitis and other lung diseases, and has been linked to premature death.

Some particles are directly emitted into the air. They come from a variety of sources such as vehicles, factories, unpaved roads, stone crushing, construction sites, and wood burning.

Other particles are formed in the air when gases from burning fuels react with sunlight and water vapor. These can result from fuel combustion in motor vehicles, at power plants, and in other industrial processes.

Some particles are large or dark enough to be seen as soot or smoke. Others are so small they can only be detected with an electron microscope.

Particulate matter is monitored differently than other pollutants. Samplers capture the tiny particles

## Wildfire Data



Air quality levels exceeded clean air standards during the October 2007 wildfires – a specific, unusual, reasonably unpreventable, natural event. The Environmental Protection Agency calls this an “exceptional event” and the data from such events is “flagged” and not used in determining compliance with clean air standards.

PM<sub>10</sub>, PM<sub>2.5</sub>, and ozone data impacted by the fires were flagged and are not included in this report's pollutant tables.

on filters and particulate concentrations are determined by weight or optical methods.

San Diego County meets the federal PM<sub>10</sub> and PM<sub>2.5</sub> standards. It does not meet the stringent State PM<sub>10</sub> standard, which is not met anywhere in the state except Lake County. It also does not meet the State PM<sub>2.5</sub> standards.

### PM<sub>10</sub>\*

### PM<sub>2.5</sub>\*

Monitoring Site (1/1/07-12/31/07*)	Annual Arithmetic Mean State Standard	Maximum 24-Hour Sample Federal Standard	Date of Maximum 24-Hour Sample	Annual Arithmetic Mean Federal Standard	Maximum 24-Hour Sample Federal Standard	Date of Maximum 24-Hour Sample
	20 µg/m <sup>3</sup>	150 µg/m <sup>3</sup> State Standard 50 µg/m <sup>3</sup>		15 µg/m <sup>3</sup> State Standard 12 µg/m <sup>3</sup>	35 µg/m <sup>3</sup>	
Chula Vista	25.2	51	Nov. 20	11.08	45.7	Nov. 20
El Cajon	25.9	48	Jan. 10	12.05	42.7	Nov. 20
Kearny Mesa	21.9	44	Nov. 20	9.82	30.6	Nov. 20
Escondido	24.4	57	Nov. 2	11.94	36.4	Dec. 25
Downtown San Diego	30.4	55	April 12	11.87	52.1	Dec. 11
Otay Mesa	46.7	143	Nov. 26			

\*Particulate data during the wildfires (October 21-27, 2007) are not included in this table.

# Attained Pollutant Standards

## Carbon Monoxide

An odorless gas, carbon monoxide (CO) is formed when the carbon in fuels does not completely burn. Although CO can show up in high concentrations near fires, its primary source is motor vehicle exhaust. The highest concentrations are usually found in areas with congested or high volumes of traffic during cold weather. Cold temperatures make combustion less complete and cause inversions that trap pollutants low to the ground.

CO is harmful when inhaled because it restricts the blood's ability to carry oxygen to the body's tissues.

Except for once during the firestorms of October 2003, the San Diego Air Basin has not violated the State or federal CO standards since 1990.

## Nitrogen Dioxide

Nitrogen dioxide (NO<sub>2</sub>) is one of the pollutants known generically as oxides of nitrogen, a primary ingredient in the formation of smog. A by-product of combustion, NO<sub>2</sub> is emitted from sources such as motor vehicles, ships, trains, construction equipment, and power plants.

An irritating gas, NO<sub>2</sub> can damage the cells of the respiratory tract and increase susceptibility to infection. It also discolors the atmosphere and is responsible for the brown haze seen in the San Diego skyline on cold mornings and at sunset.

The federal annual average NO<sub>2</sub> standard has not been exceeded since 1978 nor the State one-hour standard since 1988.

## Sulfur Dioxide

An irritating gas with a distinctive odor, sulfur dioxide (SO<sub>2</sub>) is not a problem in the San Diego Air Basin because of the low sulfur fuels used here. There have never been any violations of the federal or State SO<sub>2</sub> standards.

## Lead

Historically, the use of lead compounds in gasoline was a major source of lead in the atmosphere, however, the use of unleaded gasoline has lowered lead levels well below air quality standards.

Federal standards have not been exceeded since 1980, and State standards have not been exceeded since 1987.

### Carbon Monoxide

Monitoring Site (1/1/07-12/31/07)	Maximum 1-Hour Concentration Federal Standard	Date of Maximum 1-Hour Concentration	Maximum 8-Hour Concentration Federal Standard	Date of Maximum 8-Hour Concentration
	35 ppm State Standard 20 ppm		9 ppm State Standard 9.0 ppm	
Chula Vista	3.1	Jan. 26	2.2	Jan. 24
Escondido	8.7	Nov. 6	5.2	Dec. 27
San Diego curbside	5.2	Jan. 9	3.2	Dec. 24
Downtown San Diego	4.4	Jan. 24	3.0	Jan. 9
Otay Mesa	5.7	Nov. 13	3.4	Oct. 26

### Nitrogen Dioxide

Monitoring Site (1/1/07-12/31/07)	Annual Average Federal Standard	Maximum 1-Hour Concentration State Standard	Date of Maximum 1-Hour Concentration
	0.053 ppm	0.25 ppm*	
Chula Vista	0.015	0.082	Oct. 24
El Cajon	0.015	0.065	Oct. 24
Kearny Mesa	0.015	0.087	Oct. 22
Escondido	0.016	0.072	Nov. 28
Alpine	0.010	0.057	Nov. 20
Downtown San Diego	0.018	0.098	Oct. 24
Camp Pendleton	0.011	0.068	Jan. 25
Otay Mesa	0.022	0.101	June 20

\*The state standard was amended on February 22, 2007, to lower the 1-hour standard to 0.18 ppm and establish a new annual standard of 0.030 ppm. The revised standards will become effective on March 20, 2008.

### Sulfur Dioxide

Monitoring Site (1/1/07-12/31/07)	Annual Average Federal Standard 0.03 ppm	Maximum 24-Hour Concentration Federal Standard	Maximum 3-Hour Concentration Federal Standard**	Maximum 1-Hour Concentration State Standard
		0.14 ppm State Standard 0.04 ppm	0.5 ppm	0.25 ppm
Chula Vista	0.003	0.004	0.007	0.012
Downtown San Diego	0.003	0.006	0.010	0.018
Otay Mesa	0.003	0.009	0.017	0.027

\*\*The 3-hour maximum is a secondary standard.

# Air Quality Index

The Air Quality Index (AQI) was established to help the public understand how local air quality correlates to health.

One way of conveying air pollution information is to report the concentrations of each pollutant. However, different pollutants affect health at different concentrations. The AQI avoids this problem by relating similar degrees of health effects to a uniform scale based on pollutant concentrations.

An AQI value for an area is calculated for each of the major pollutants. The highest of the AQI values for the individual pollutants becomes the AQI value for that day.

Since San Diego County is in attainment for all but ozone and particulates, the AQI will be for either ozone or particulates, depending on which is higher for that day. Ozone is the predominant pollutant of concern during the summer months while PM<sub>2.5</sub> results in higher AQI readings during the fall and winter months.

The AQI is a national index, so the values and colors used to show local air quality and the associated level of health concern will be the same everywhere in the U.S.

<b>201-300</b> <b>Very Unhealthy</b>	A health alert – everyone may experience more serious health effects
<b>151-200</b> <b>Unhealthy</b>	Everyone may begin to experience health effects
<b>101-150</b> <b>Unhealthy for Sensitive Groups</b>	Sensitive individuals may experience health effects
<b>51-100</b> <b>Moderate</b>	Air quality is acceptable
<b>0-50</b> <b>Good</b>	Air quality is satisfactory

## Monitoring Network

The San Diego Air Pollution Control District regulates sources of air pollution throughout all 4,225 square miles of San Diego County. Since the population and most pollution sources are concentrated in the western portion of the county, the District conducts its air sampling at monitoring stations in the western region.

District meteorologists use data collected from these stations to assess the region's air quality status and forecast daily pollution levels. Using the Air Quality Index (AQI), next-day forecasts are issued at 4:30 p.m. each weekday and, as necessary, on weekends. This forecast, along with the measured AQI for that day, is recorded in English and Spanish on a 24-hour message line at (858) 586-2800 and is included on the District's web site at [www.sdapcd.org](http://www.sdapcd.org) (under Current Air Quality, Forecasts).

The District's web site also enables the public to check pollution concentrations currently being recorded at these stations and contains the District's complete Ambient Air Monitoring Network Plan.

### Monitoring Stations





# Air Toxics

Some air pollutants can cause cancer, adverse reproductive effects, and other serious health problems. These pollutants – commonly called air toxics, toxic air contaminants, or hazardous air pollutants – differ significantly from the criteria pollutants.

Acceptable levels of exposure can be determined and air quality standards established for the criteria air pollutants. For air toxics, there may not be a threshold level. They may produce health effects at extremely low concentrations, and some may accumulate in the body from repeated exposures.

Working with air toxics differs significantly from working with traditional criteria pollutants because there are a large number of substances that are potentially toxic and there are limited health effects data. The Federal Clean Air Act lists 188 hazardous air pollutants. The California Air Resources Board (ARB) lists more than 700 compounds to be assessed under its Air Toxics “Hot Spots” Program.

Some examples of toxic air contaminants include benzene, which is found in gasoline; perchloroethylene, which is emitted from some dry cleaning facilities; methylene chloride, which is used as a solvent and paint stripper; and chromium, nickel, and copper, which can be emitted from plating, painting, and welding operations.

The State ARB identified diesel particulate matter (PM) as a toxic air contaminant in 1998 based on its potential to cause cancer, premature deaths, and other health problems. Diesel exhaust contains a variety of harmful gases and more than 40 other cancer-causing substances.

Particulate matter from diesel-fueled engines, both mobile and stationary, is responsible for most of the airborne cancer risk from toxic air contaminants in California. Estimates are that more than 70% of the known risk from air toxics today result from diesel particulate matter.

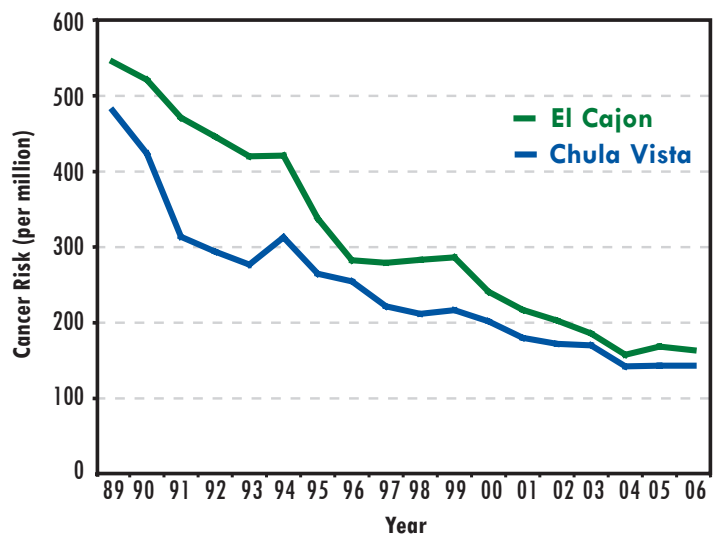
To address this problem, the State developed a diesel risk reduction plan in September 2000 with

the goal of a 75% reduction in diesel particulate emissions by 2010 and an 85% reduction by 2020 from the 2000 baseline.

The State also requires facilities to report air toxic emissions to the local air pollution control district under its “Hot Spots” Program. About 1,500 local facilities submit emission reports to the District for evaluation. Since 1989, toxic air contaminant emissions from industrial sources in San Diego County have been reduced by approximately 82%. Detailed emission inventories for individual facilities and an annual “Hot Spots” progress report are available on the District’s web site at [www.sdapcd.org](http://www.sdapcd.org).

Since the mid-1980s, the District has operated toxic air contaminant sampling sites in El Cajon and Chula Vista. These two sites were chosen because they are located nearby and downwind of transportation, industrial, and other air pollutant sources. Three more sites were added in 2006: Escondido, Otay Mesa, and downtown San Diego.

## Incremental Cancer Risk



The District began sampling for toxic air contaminants at the El Cajon and Chula Vista monitoring stations in the mid-1980s. As shown above, incremental cancer risk from levels of toxic air contaminants has steadily decreased.

# Vehicles – The Problem

Motor vehicles are San Diego County's leading source of air pollution and the largest contributor to greenhouse gases. The region's 3.1 million residents collectively own 2.3 million vehicles and drive about 87,000 miles each day. Reducing vehicle emissions is essential to achieving clean air and slowing the rate of global warming.

The State of California has pioneered efforts to reduce air pollution and to control greenhouse gases. It was the first state to recognize the impact of vehicle emissions on air quality and to adopt motor vehicle emissions standards. Motor vehicles continue to be regulated by State and Federal governments.

## Air Pollution

The pollutant ozone ( $O_3$  or smog) is not directly emitted from vehicle tailpipes but instead forms in the atmosphere by means of a chemical reaction. Oxides of nitrogen ( $NO_x$ ) and hydrocarbons [also termed reactive organic gases (ROG) or volatile organic compounds (VOCs)] react in the presence of sunlight to form ozone. Both  $NO_x$  and hydrocarbons are emitted by motor vehicles.

Some other pollutants can be emitted directly from a vehicle's tailpipe. Carbon monoxide ( $CO$ ) is emitted when the carbon in fuels doesn't completely burn.

Particulate matter may also come out of a vehicle's tailpipe as

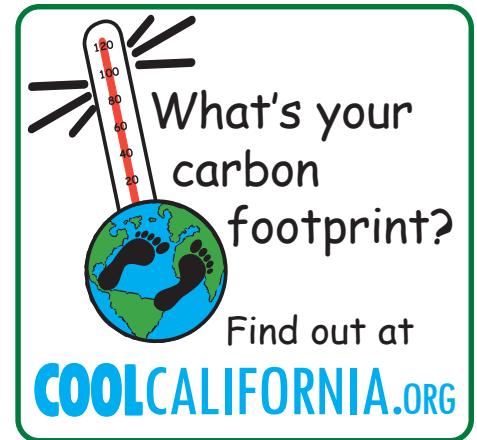
well as result from normal brake pad and tire wear. In addition, precursors in vehicle exhaust may react in the atmosphere to form particulate matter.

Motor vehicle exhaust also contains toxic air pollutants, such as benzene, formaldehyde, 1,3-butadiene, and diesel particulate matter.

## Global Warming

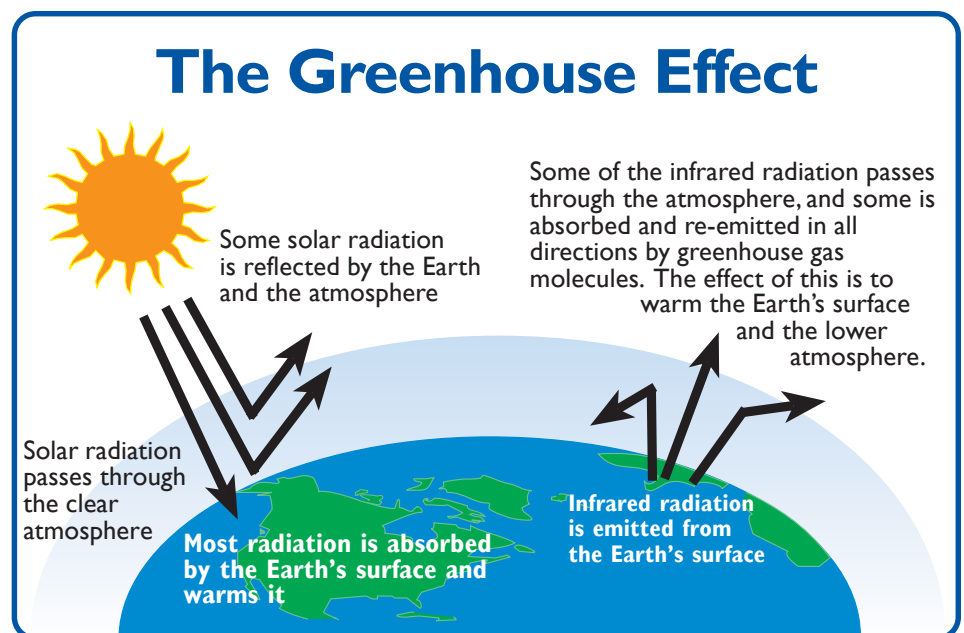
Global warming refers to an average increase in the temperature of the atmosphere near the Earth's surface that can contribute to changes in global climate patterns.

Gases that trap heat in the atmosphere are often called greenhouse gases. These gases prevent heat from escaping to space, somewhat like the glass panes of a greenhouse.



Carbon dioxide ( $CO_2$ ) is the greenhouse gas emitted in the largest quantity (not to be confused with the criteria air pollutant carbon monoxide or  $CO$ ). In California, more than half of fossil fuel emissions of carbon dioxide are related in some way to transportation.

Other greenhouse gases emitted by motor vehicles include methane, nitrous oxide, and hydrofluorocarbons.



Many of the ways to reduce air pollution also reduce greenhouse gas emissions. Reducing your driving, keeping your vehicle well maintained, recycling, and curbing your energy use will not only lower your contribution to global warming but will also help make the air cleaner.

## Statewide Programs

The State of California has developed statewide programs to encourage cleaner cars and cleaner fuels.

Since 1996, California's gasoline has been the cleanest in the world. Cleaner-burning gasoline reduces smog-forming emissions from motor vehicles by 15% and reduces cancer risk from exposure to motor vehicle air toxics by about 40%.

Also, all diesel fuel sold in California must meet pollution-cutting specifications established by the State to ensure that California diesel fuel is the cleanest-burning in the country.

The State's Bureau of Automotive Repair (BAR) administers the Smog Check program. Adopted in 1982, the goal of the Smog Check program is to reduce polluting emissions produced by motor vehicles. The BAR licenses more than 8,000 privately-owned Smog Check stations and more than 15,000 Smog Check technicians, thereby implementing the program through a decentralized system.

Whether or not a vehicle needs a smog check depends on the type of vehicle, the model year, and the area in which the vehicle is registered.

The State also offers a voluntary vehicle retirement program for vehicle owners whose vehicles have failed Smog Check and who want to voluntarily retire their vehicle rather than repair it. Qualifying vehicle owners can receive \$1,000 in exchange for their polluting vehicle.

The State's Air Resources Board (ARB) works with manufacturers to develop engine and emission control systems that reduce specific pollutants. A vehicle's emissions rating is posted on the Vehicle Emission Control Information label.

The State has developed a web site to help car buyers identify

the least polluting vehicles. Car buyers can search for vehicles meeting California's most stringent emission ratings, research financial incentives, and find out what new clean vehicles are being planned on the State's website at [www.driveclean.ca.gov](http://www.driveclean.ca.gov).

The U. S. Environmental Protection Agency provides an environmental comparison to help consumers find the cleanest and most fuel-efficient vehicle that meets their individual needs at [www.epa.gov/greenvehicles](http://www.epa.gov/greenvehicles).

While good fuel efficiency does not necessarily mean clean emissions, a car that burns less fuel generally pollutes less. It also emits less carbon dioxide, a greenhouse gas. The U.S. Department of Energy provides MPG (miles per gallon) ratings at [www.fueleconomy.gov](http://www.fueleconomy.gov).

## How to Drive Clean

- Buy a hybrid car
  - Hybrids are the only cars to get over 50 MPG on the highway
  - You can lower your carbon emissions by 10,192 lbs./yr.
- Own a fuel efficient car
  - Help save the environment while staying within your budget
  - You can lower your carbon emissions by 7,056 lbs./yr.
- Use alternative fuel sources
  - Decrease dependency on foreign oil
  - Leading fuel sources:
    - ❖ Natural gas
    - ❖ Biodiesel
    - ❖ Propane
    - ❖ Electricity
    - ❖ Ethanol
    - ❖ Hydrogen

# 2007 Highlights

## Wildfires

With strong winds fanning the flames, the Harris and Witch Creek wildfires in late October 2007 caused air pollution to reach levels that could endanger public health.

To better determine public exposure to fine particulate matter (PM<sub>2.5</sub>), the District borrowed five continuous monitors from the California Air Resources Board to enhance its monitoring efforts. This enabled citizens to view real-time data from nine monitors on the District's web site. Air quality forecasts were also frequently updated, and the forecast message line received more than 7,500 calls during the firestorms.

The District's meteorologists staffed the County's Emergency Operations Center providing

around-the-clock air quality and meteorological information to fire, public safety, and public health personnel.

For weeks after the fires, the District continued to utilize an enhanced monitoring network, analyze ash and particulate matter for toxic compounds, and assist with local recovery efforts.

## Business Case Management System

Implementation of the long-awaited Business Case Management System (BCMS) officially kicked off at the end of the year. The new system will enable the District to better utilize technology to serve the needs of both the District and its customers.

As part of the BCMS effort, a team of District associates tackled the challenge of improving the

District's equipment registration program at a Business Process Reengineering event. As a result, a streamlined process was developed that has enabled equipment registrations to be processed more quickly and accurately.

## Eight-Hour Ozone Attainment Plan

The San Diego Air Pollution Control District was the first air district in California to submit its 8-Hour Ozone Attainment Plan to the U.S. Environmental Protection Agency (EPA).

Each area of the nation with air pollution levels violating a federal air quality standard must submit a plan outlining the actions and regulations needed in order for the area to meet the air quality standard.

## Binational Projects

The District retrofitted its 50th truck with pollution controls as part of the San Diego/Tijuana Clean Diesel Demonstration Project, an innovative program to reduce heavy-duty diesel truck exhaust in the border region.

Using grant funds provided by the EPA, this project benefits San Diego County residents by reducing harmful diesel emissions in the region from Mexico-domiciled trucks that can legally operate in San Diego but over which the District has no regulatory authority.



*District meteorologists staffed the Emergency Operations Center providing valuable information to other responding agencies throughout the firestorms.*

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## Streamlined Permitting Process

The District launched new permitting procedures for several types of equipment in 2007. Over-the-counter or expedited permits are now available for gas station phase II enhanced vapor recovery (EVR Phase II) systems, Rule 12 and 12.1 registered equipment, small boilers, and petroleum dry cleaners.

## Monitoring Study

The District conducted a special monitoring study to determine air quality impacts generated from motorcycle racing activity at the Barona Oaks Raceway.

The purpose of the study was to quantify the levels of inhalable particulates (PM<sub>10</sub>), volatile organic compounds, and several toxic organic compounds transported into a nearby residential area.

This study did not reveal any adverse impact.

## Emission Reduction Contracts

More than \$5 million was allocated to local projects that will reduce emissions from heavy-duty diesel engines. Funded by the State's Carl Moyer Program and by motor vehicle emission reduction funds, these projects will reduce emissions by about 132 tons annually.

Also, nearly \$2 million was allocated to retrofit 139 in-use

diesel school buses, replace 42 compressed natural gas tanks, and purchase 11 particulate filter cleaning systems for school bus maintenance.

## New Rules

In 2007, the District replaced existing Rule 67.6 (Solvent Cleaning Operations) with two new Rules – Rule 67.6.1 (Cold Solvent Cleaning and Stripping Operations) and Rule 67.6.2 (Vapor

Degreasing Operations). Rule 67.6 will be automatically repealed on May 23, 2008.

The new rules strengthened the emission reduction requirements for solvent cleaning operations and take advantage of advances in low-emitting cleaning solvent technology.

The effective repeal date for current Rule 67.6 coincides with the compliance schedule for the two new rules.

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## Other Accomplishments

- Completed a full year of ambient toxics sample collection at monitoring sites in Otay Mesa, downtown San Diego, and Escondido. Sampling is on a one-in-six day schedule, and analysis for 48 compounds is conducted in the District laboratory.
- Created a new tracking system designed to enhance the analysis of data for all District monitoring sites and upper air profilers.
- Collaborated with the Department of Environmental Health and County Counsel to develop guidelines for nuisance and air pollution control during refuse removal for homes and businesses destroyed during the October 2007 firestorms.
- Conducted orientation for Carl Moyer Program fund awardees in the Off-Road category to expedite and complete contract processing before the implementation of a new State off-road rule.
- Rated "Excellent" by the U.S. Environmental Protection Agency for work completion and submission of annual mid-year and end-of-year grant reports.
- Held its eighth annual Lawn Mower Trade-In event whereby 400 County residents exchanged high-polluting gasoline lawn mowers for zero emissions rechargeable mowers.
- Conducted six compliance training sessions to assist the regulated community in complying with District requirements and conducted outreach at more than 140 local businesses.

# About the District

The Air Pollution Control District is a local government agency dedicated to protecting the people and the environment of San Diego County from the harmful effects of air pollution.

The five elected members of the San Diego County Board of Supervisors serve as the Air Pollution Control Board.

The Board adopts clean air plans and local rules, appoints the District's director, and allocates funding for District operations. This funding comes from the State and federal governments, permit fees charged to local businesses and industries, and vehicle registration fees.

The District regulates stationary sources of air contaminants in an effort to achieve and maintain state and federal air quality standards. It is organized into five main areas, each playing a key role in preserving healthful air quality

## Our Mission

*To protect the public from the harmful effects of air pollution, achieve and maintain air quality standards, foster community involvement, and develop and implement cost-effective programs meeting State and federal mandates, considering environmental and economic impacts.*

## Air Resources & Strategy Development

The Air Resources & Strategy Development (ARSD) Division prepares long-term regional plans to reduce unhealthy pollution levels, including the District's Regional Air Quality Strategy that outlines specific measures to attain State air quality standards, and issues status reports on air quality progress.

ARSD also develops local air quality rules and regulations, and it maintains San Diego's portion of the State Implementation Plan, a collection of the regulations used by the State to reduce air pollution to levels prescribed by the federal government.

In addition, ARSD administers binational projects to reduce toxic diesel emissions in the region from Mexico-domiciled trucks.



*Binational projects such as retrofitting diesel trucks help improve air quality.*



*A District mechanical engineer records engine operating data.*

## Engineering

District engineers evaluate and issue construction and operating permits to ensure proposed new or modified commercial and industrial equipment and operations comply with air pollution control laws.

Permits are required (unless exempted) for processes and equipment capable of emitting air contaminants to ensure they are controlled to the maximum degree technically and economically feasible and that they do not interfere with the attainment and maintenance of healthy air quality.

The Engineering Division also implements air toxic emissions inventory and control programs, prepares stationary source emission inventories, and evaluates special projects that may impact air quality.

## Monitoring & Technical Services

The Monitoring & Technical Services Division maintains ten air monitoring stations that continuously record air pollutant concentrations in the San Diego Air Basin.

Air quality forecasts using the Air Quality Index (AQI) are issued at about 4:30 p.m. each weekday and, as necessary, on weekends. In addition, this division determines whether air quality conditions allow for or prohibit open burning.



Monitoring staff conducts particulate testing at an asphalt plant in San Marcos.

Monitoring also conducts field testing of industrial sources of air pollution, conducts laboratory analysis for air contaminants, prepares regular and special air quality reports, and is responsible for air quality modeling to determine potential impacts of new sources.



Compliance inspectors ensure that vapor recovery systems are working properly.

## Compliance

Air quality inspectors in the Compliance Division conduct more than 10,000 inspections a year to ensure that regulated sources operate in compliance with permit conditions and all applicable regulations.

Working with industry, this division also helps businesses by sending informational advisories to all those affected when new requirements are established, providing formal training, and giving individual assistance.

District inspectors respond to about 500 public complaints a year on air quality matters such as dust from a grading operation or odors from an automotive paint shop. Citizens can report any suspected air quality violations by calling (858) 586-2650 or by visiting the District's web site at [www.sdapcd.org](http://www.sdapcd.org).

## Administrative Support

The Administrative Support Division prepares and administers the District budget, performs business and accounting tasks, and provides permit system support. It provides employee training, facility management, and information technology coordination. In addition, it handles public educational and outreach efforts on reducing air pollution.

The Administrative Support Division also administers funds that are used to reduce regional mobile source emissions. This includes vehicle registration fund projects, the Lower-Emission School Bus Program, the Carl Moyer Memorial Air Quality Standards Attainment Program, and mitigation fees from local power generators.



Air quality information is displayed at outreach events throughout the County.

# San Diego County Air Pollution Control Board

District 1  
**Greg Cox**

District 2  
**Dianne Jacob**

District 3  
**Pam Slater-Price**

District 4  
**Ron Roberts**

District 5  
**Bill Horn**

Citizen Advisory  
Committee

**Director, Air Pollution Control District**

Hearing Board

**Assistant Director**

Personnel

Engineering	Compliance	Air Resources & Strategy Development	Monitoring & Technical Services	Administrative Services
Chemical & Vapor Recovery	Industrial Inspections	Air Quality Plan Preparation/Progress Reporting	Air Quality Network	Mobile Emission Reduction Incentive Program
Mechanical	Citizen Complaint Investigations	Mobile Source Rule Development, Planning & Emissions Inventory	Monitoring & Maintenance	Outreach & Training
Air Toxics & Emissions Inventory	Violation Settlement Program	CEQA Implementation	Emissions Testing	Permit Processing
Special Projects & Title V	Hearing Board Liaison	Rule Development	Meteorology & Modeling	Accounting & Finance
	Asbestos Program			Contracts
	Open Burn Program			Information Technology Coordination
	Small Business Compliance Assistance			



10124 Old Grove Road, San Diego, CA 92131  
(858) 586-2600

## 10 Ways to Clear the Air

- 1) Reduce your driving.
- 2) Keep your car in good running condition and the tires properly inflated.
- 3) Don't top off your gas tank.
- 4) Support the smog check program.
- 5) Call 1-800-28-SMOKE to report vehicles with excessive tailpipe emissions.
- 6) Around the home, avoid using aerosol spray products.
- 7) Use water-based paints and solvents. Keep lids closed and use brushes or rollers rather than sprayers.
- 8) Start barbecue briquettes with an electric probe or use a propane barbecue.
- 9) Use energy-efficient lighting. Raise your air conditioner's thermostat and lower your heater's.
- 10) Use a push or electric lawn mower.

Permit & General Information .....	(858) 586-2600
Air Quality Forecast Message .....	(858) 586-2800
Burn Forecast for Open Burning .....	(858) 586-2800
Citizen/Odor Complaints .....	(858) 586-2650
Community Outreach .....	(858) 586-2707
Small Business Assistance (with air quality rules) ....	(858) 586-2656
Smoking Vehicle Hotline .....	(800) 28-SMOKE

## Other Helpful Phone Numbers

Air Resources Board .....	(916) 322-2990
American Lung Association .....	(619) 297-3901
ARB Motor Vehicle Hotline .....	(800) 242-4450
Asthma & Allergy Foundation .....	(800) 7ASTHMA
Caltrans General Information .....	(619) 688-6670
Clerk of the Board .....	(619) 531-5600
Environmental Protection Agency .....	(415) 947-8000
Hazardous Materials Information .....	(619) 338-2231
Recycling (non hazardous waste) .....	(877) 713-2784
Smog Check Test Only Stations .....	(800) 952-5210
South Coast Air Quality Management District ..	(909) 396-2000
Stratospheric Ozone Hotline .....	(800) 296-1996
Transit/Trolley/Carpool/Coaster Information .....	511
Weather .....	(619) 297-2107