

Air Quality in San Diego County



2004 ANNUAL REPORT

The Year's Air Quality

San Diego County has made great strides towards clean air.

In 2004, San Diego County exceeded the state ozone standard on 12 days, the federal eight-hour standard on 8 days, and the federal one-hour standard on 1 day. Ozone is the chief component of smog.

Despite continued growth in population and motor vehicle usage, San Diego County has experienced substantial improvement in air quality since 1977, the earliest year with comparable data. The state one-hour ozone standard was exceeded on 168 days in 1977, improving to 12 days over standard in 2004, chalking up a remarkable 93% improvement. Over the same 27-year period (1977 to 2004), the region's population grew 70% (from 1.7 million to 3 million) and daily motor vehicle mileage more than doubled.

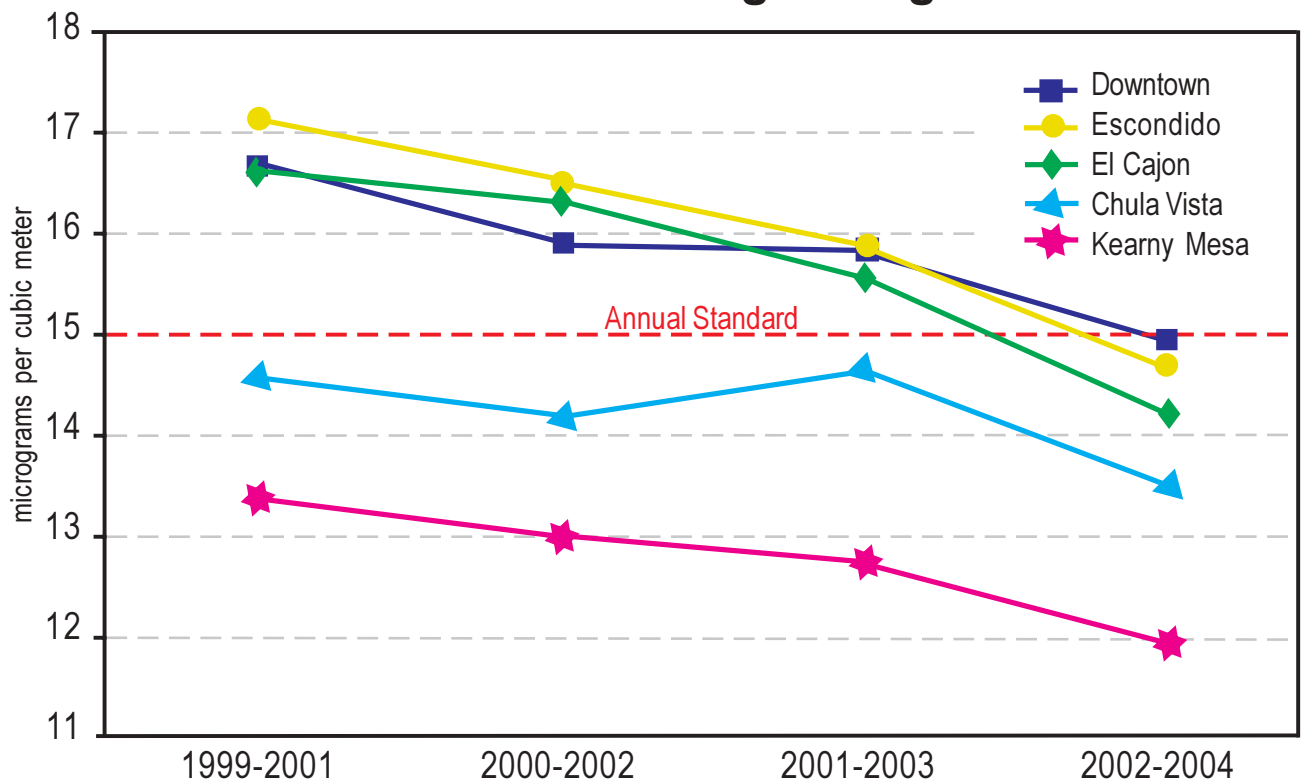
Except for during the wildfires of October 2003, particulate matter levels have also improved – the annual average declining 25% since 1986, the earliest year with comparable particulate data. This is in part due to reductions in emissions of ozone precursors, which also contribute to the formation of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



District chemists are able to perform low level oxides of nitrogen (NOx) source tests using equipment housed in a mobile van. NOx contributes to ozone formation.

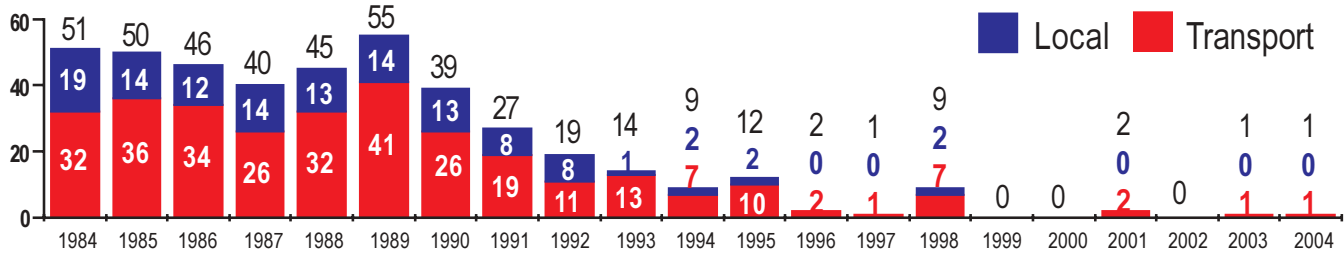
The air quality improvement despite regional growth clearly shows emission control measures are working. Nevertheless, continued emission reduction efforts are needed in order to attain more stringent state ozone and fine particulate standards. Expected growth in motor vehicle usage, population, and industrial and commercial activities will continue creating challenges in controlling emissions to improve air quality.

PM 2.5 Three-Year Average Design Values

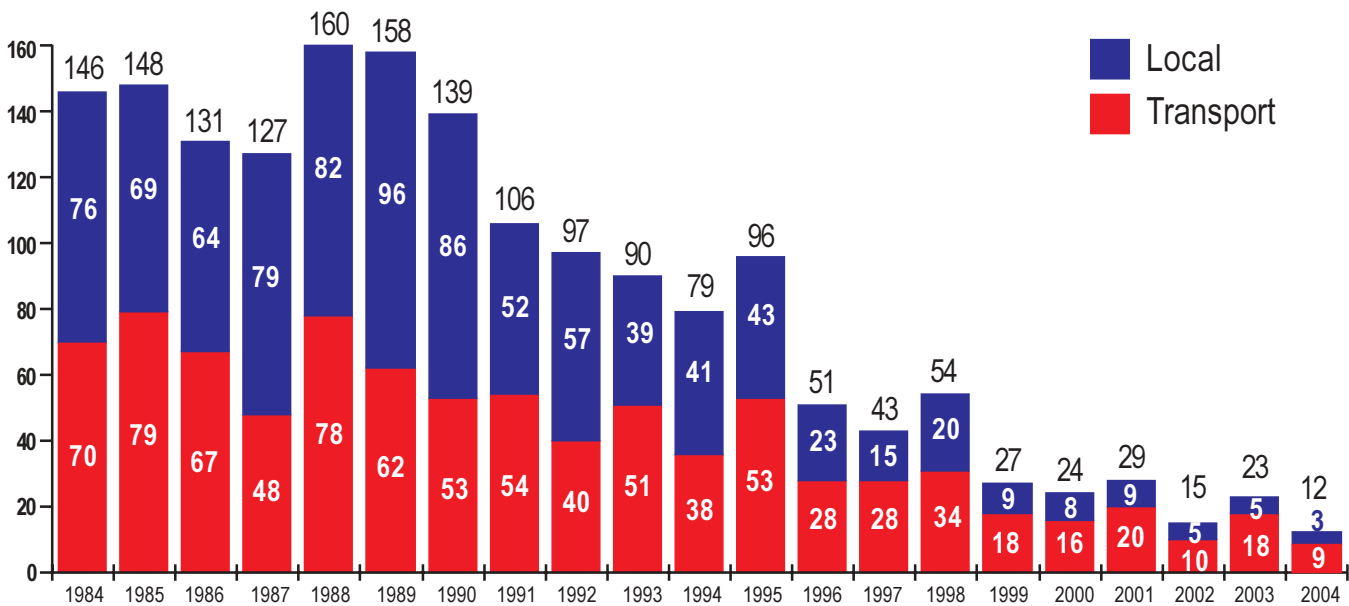


Air Quality Improvement

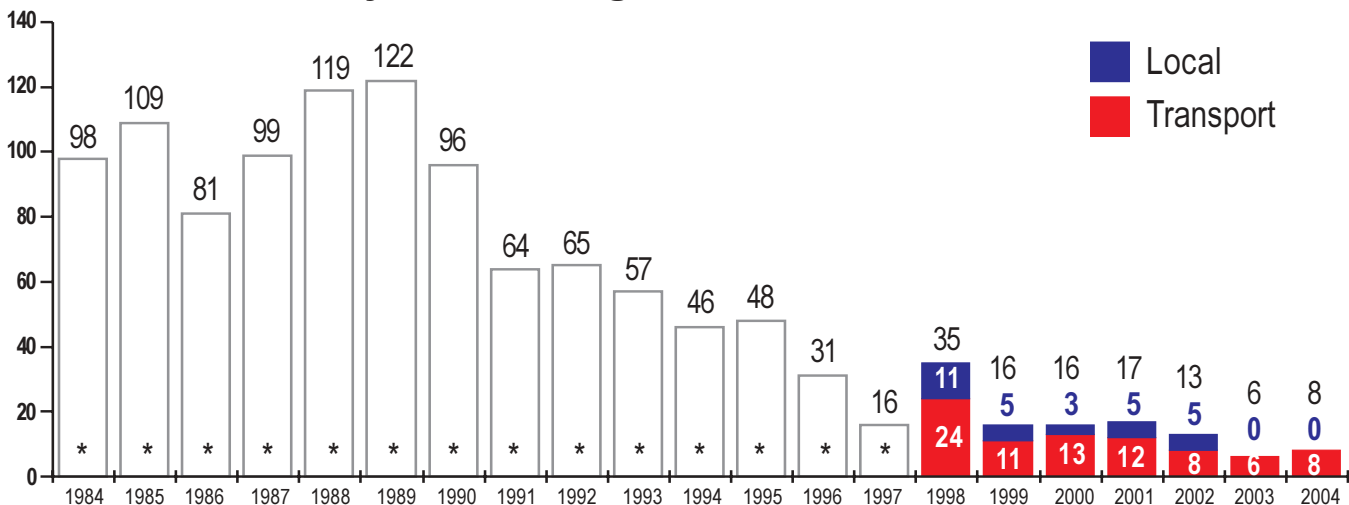
Number of Days Exceeding Federal 1-Hour Ozone Standard



Number of Days Exceeding State 1-Hour Ozone Standard



Number of Days Exceeding Federal 8-Hour Ozone Standard



* The breakdown between local and transported emissions is not available prior to 1998.

Ozone

San Diego County has made great progress in overcoming what historically has been its primary air pollution problem – smog.

Measured as ground-level ozone, San Diego County exceeded the federal one-hour clean air standard for ozone on only four days since 1999. An exceedance of a standard occurs when the pollutant concentration is greater than the prescribed limit at one or more monitoring stations.

With exceedances of the federal one-hour ozone standard virtually eliminated, the focus has now shifted to the more stringent state one-hour and the federal eight-hour standards. Smog levels exceeded the state one-hour ozone standard on 12 days and the federal eight-hour on 8 days in 2004. Ozone levels are measured every hour at nine monitoring stations located throughout San Diego County (*see list of sites in table below*).

A colorless gas composed of three oxygen atoms, ozone can be good or bad depending on where in the atmosphere it is located. Ozone in the stratosphere (seven or more miles above the earth) protects the planet from the sun’s harmful ultraviolet radiation; ozone at ground level is unhealthy to breathe.

Ozone occurs naturally in the earth’s upper atmosphere where it forms a protective layer. International efforts are well underway to protect this

beneficial ozone threatened by man-made chemicals. In the earth’s lower atmosphere, near ground level, ozone is formed when pollutants emitted by cars, power plants, industrial processes, gas stations, and other sources react chemically in the presence of sunlight.

A strong irritant, ozone can restrict airways, resulting in difficulty breathing and forcing the respiratory and cardiovascular systems to work harder in order to provide oxygen. It can inflame and damage the lining of the lungs. Ozone is especially harmful for children whose lungs are still developing, senior citizens whose immune systems are weakening, and those who suffer from asthma or chronic lung or heart disease.

To protect public health, clean air standards have been established. For more than 20 years, the federal standard was 12 parts ozone per hundred million parts air (12 pphm) averaged every one-hour period. In 1997, the eight-hour ozone standard was introduced after medical studies revealed that longer-term exposures at ozone levels below 12 pphm caused significant health effects.

The eight-hour standard is 8 pphm based on any running eight-hour average. Although it appears to be more stringent, it has a longer averaging period of eight hours; and multi-hour averages are always lower than their highest single hour.

California’s one-hour standard of 9 pphm is slightly more health protective than the federal eight-hour standard.

The last health advisory for smog occurred in July 1998. A health advisory is issued when smog levels reach 15 pphm (one hour average), and people are advised to reduce vigorous outdoor activity.

San Diego has not recorded a Stage I smog episode (commonly called a smog alert) since 1991 and no Stage II episodes since 1979. A Stage I occurs when smog levels reach 20 pphm and a Stage II alert is called at 35 pphm.

Ozone (Smog)					
Monitoring Station	Number of Days Exceeding Federal Standard 1-Hour Concentration >0.125 ppm	Number of Days Exceeding State Standard 1-Hour Concentration >0.095 ppm	Number of Days Exceeding Federal Standard 8-Hour Concentration >0.085 ppm	Maximum 1-Hour Concentration	Date of Maximum 1-Hour Concentration
Chula Vista	0	1	1	0.097	May 3
El Cajon	0	1	0	0.096	Oct. 9
Kearny Mesa	0	6	2	0.105	May 2
Del Mar	1	3	3	0.129	Oct. 8
Escondido	0	2	2	0.099	April 27
Alpine	0	5	2	0.106	May 31
Downtown San Diego	0	0	0	0.093	Sept. 5
Camp Pendleton	0	4	2	0.110	May 3
Otay Mesa	0	1	0	0.095	April 27
Basinwide	1	12	8	0.129	Oct. 8

Particulates

Particle pollution is a mixture of microscopic solids and liquid droplets suspended in air. This pollution, known as particulate matter or PM, is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. Particles can be suspended in the air for long periods of time. Some particles are large or dark enough to be seen as soot or smoke. Others are so small that individually they can only be detected with an electron microscope.

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

Other particles may be formed in the air from the chemical change of gases. They are indirectly formed 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.

The size of particles is directly linked to their potential for causing health problems and air quality standards for particles are divided into two size ranges: those less than or equal to 10 microns in diameter (PM_{10}) and those less than or equal to 2.5 microns ($PM_{2.5}$). Depending on their size, these tiny particles affect different parts of the body's respiratory tract. Particles 2.5 to 10 microns (millionths of a meter) tend to collect in the upper portion while the fine particles, 2.5 microns or less in diameter, are so small they can penetrate deeper into the lungs and damage lung tissue. Exposure to fine particulate can increase the number and severity of asthma attacks and cause or aggravate bronchitis and other lung diseases. Chronic, long-term exposure to elevated fine particulate can exacerbate other illnesses.

Although individually too tiny to be seen, these particles affect our view. They absorb and scatter light. Airborne particles are a primary component of the

haze that obscures visibility in our cities, rural communities, and scenic parks.

Particulate matter is monitored differently than other pollutants. As air flows through high-volume air sampling equipment, the tiny particles are captured on uncontaminated, pre-weighed filters. These filters are then weighed again and the particulate concentrations determined.

There are both state and federal standards for PM_{10} and $PM_{2.5}$, and both annual and daily (24-hour) standards. The state standards are the most stringent.

San Diego meets the federal PM_{10} standards but exceeds the state standard. Compliance with the $PM_{2.5}$ standards is still being determined, however, levels of fine particulate have been declining in the last several years. (See graph on page 2.)

PM 10			
Monitoring Site	Annual Arithmetic Mean Federal Standard 50 $\mu\text{g}/\text{m}^3$ State Standard 20 $\mu\text{g}/\text{m}^3$	Maximum 24-Hour Sample Federal Standard 150 $\mu\text{g}/\text{m}^3$ State Standard 50 $\mu\text{g}/\text{m}^3$	Date of Maximum 24-Hour Sample
Chula Vista	25.9	44	Jan. 16
El Cajon	30.1	55	March 22
Kearny Mesa	24.6	44	April 29
Escondido	27.3	57	Jan. 10
Downtown San Diego	33.3	68	Dec. 17
Otay Mesa (border crossing)	51.2	137	Dec. 15
PM 2.5			
Monitoring Station	Annual Arithmetic Mean Federal Standard 15 $\mu\text{g}/\text{m}^3$ State Standard 12 $\mu\text{g}/\text{m}^3$	Maximum 24-Hour Sample Federal Standard 65 $\mu\text{g}/\text{m}^3$	Date of Maximum 24-Hour Sample
Chula Vista	12	33	March 16
El Cajon	13	44	Jan. 1
Kearny Mesa	11	29	March 19
Escondido	14	67	Jan. 1
Downtown San Diego	14	43	Jan. 9

Other Pollutants

Carbon Monoxide

An odorless gas, carbon monoxide (CO) forms when the carbon in fuels does not completely burn. Primarily from 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 concentrations during the wildfires of October 2003, San Diego has not violated the state or federal CO standards since 1990.

Nitrogen Dioxide

The brown haze seen in the San Diego skyline on cold mornings is primarily nitrogen dioxide (NO₂). A highly reactive gas, it is formed when another pollutant (nitric oxide) combines with oxygen in the atmosphere. Once it has formed, nitrogen dioxide reacts with other pollutants (volatile organic compounds). Eventually these reactions result in the formation of ground-level ozone and secondary particulates. Major sources include motor vehicles and power plants.

An irritating gas, NO₂ can damage the cells of the respiratory tract and increase susceptibility to infection.

Nitrogen Dioxide			
Monitoring Site	Annual Average Federal Standard 0.053 ppm	Max. 1-Hour Concentration in ppm State Standard 0.25 ppm	Date of Maximum Concentration
Chula Vista	0.016	0.072	May 2
El Cajon	0.019	0.075	Jan. 13
Kearny Mesa	0.017	0.085	Jan. 10
Escondido	0.018	0.080	Oct. 8
Alpine	0.011	0.063	March 18
Downtown San Diego	0.020	0.094	May 3
Camp Pendleton	0.012	0.099	Jan. 13
Otay Mesa	0.023	0.125	Sept. 1

San Diego County has not exceeded the federal annual average NO₂ standard since 1978 nor the state one-hour standard since 1988.

Sulfur Dioxide

An irritating gas with a distinctive odor, sulfur dioxide (SO₂) is not a problem in San Diego County because the region does not have the heavy manufacturing and refining associated with this pollutant.

There has never been a violation of the federal or state SO₂ standards in San Diego County.

Lead

San Diego no longer monitors for 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	Maximum 1-Hour Concentration in ppm Federal Standard 35 ppm State Standard 20 ppm	Date of Max. 1-Hour Concentration	Max. 8-Hour Concentration in ppm Federal Standard 9 ppm State Standard 9 ppm	Date of Max. 8-Hour Concentration
Chula Vista	3.9	Feb. 12	2.5	Jan. 10
Escondido	5.3	Dec. 11	3.6	Dec. 11
San Diego Union St.	6.3	Jan. 14	3.8	Jan. 1
San Diego 12th Ave.	4.9	Aug. 10	4.0	Jan. 11
Otay Mesa	6.9	Dec. 14	4.1	Dec. 14

Sulfur Dioxide				
Monitoring Site	Annual Average in ppm Federal Standard 0.030 ppm	Max. 24-Hour Concentration in ppm Federal Standard 0.14 ppm State Standard 0.05 ppm	Max. 3-Hour Concentration in ppm Federal Standard 0.5 ppm	Max. 1-Hour Concentration in ppm State Standard 0.25 ppm
Chula Vista	0.003	0.015	0.021	0.042
Downtown San Diego	0.004	0.009	0.020	0.042
Otay Mesa	0.006	0.014	0.028	0.045

Air Toxics

Some air pollutants can cause cancer, adverse reproductive effects, and other serious health illnesses as well as environmental damage. These chemicals – commonly called air toxics, toxic air contaminants, or hazardous air pollutants – differ significantly from criteria air pollutants.

A criteria air pollutant is one for which acceptable levels of exposures can be determined and for which an ambient air quality health standard has been set. Science-based “criteria” are first developed and then used as the basis for setting permissible levels. Toxic air contaminants, on the other hand, may produce health effects at extremely low levels, and some may accumulate in the body from repeated exposures.

Working with air toxics differs significantly from working with traditional pollutants because there are a large number of substances that are potentially toxic and there is limited health-effects data. The federal Clean Air Act identifies 188 hazardous air pollutants.

Toxic air contaminants are released from motor vehicles, some industrial processes, and consumer products. For example, perchloroethylene is emitted from many dry cleaning facilities; and chromium, nickel, and copper can be emitted from plating, painting, and welding operations. Cars, trucks, buses, and other mobile sources release large amounts of diesel exhaust particulates, butadiene, formaldehyde, and benzene.

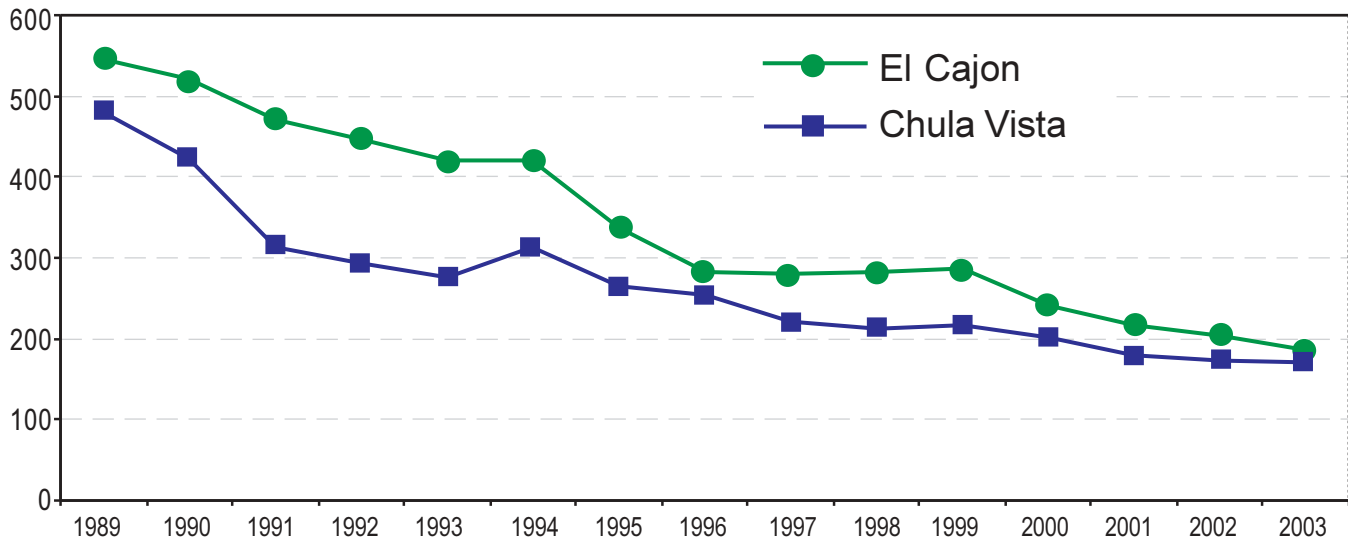
Emissions from diesel engines are responsible for the majority of the potential airborne cancer risk from toxic air contaminants in California. Accordingly, the state had developed a diesel risk reduction plan to reduce diesel emissions from both new and existing diesel-fueled engines and vehicles. The goal is to reduce diesel particulate emissions and associated health risk by 75% in 2010 and 85% in 2020.

The state also requires facilities to report air toxic emissions to the local air pollution control district. About 1,600 local facilities submit emission reports to the District for evaluation. Facilities that pose a significant risk to public health must notify local residents of the potential risk and may be required to reduce that risk.

A progress report entitled the 2003 Air Toxics “Hot Spots” Program Report is available by contacting the District at (858) 650-4700 or by visiting its web site at www.sdapcd.org.

Since 1990, the District has operated toxic air contaminant sampling sites in El Cajon and Chula Vista. These two monitoring locations are considered the most appropriate sites for this sampling because they are located nearby and downwind of transportation, industrial, and other air pollutant sources. As shown below, incremental cancer risk from levels of toxic air contaminants has steadily decreased.

Incremental Cancer Risk



Note: The risk values presented on this graph do not include risk from diesel particulates. Diesel particulates cannot be directly measured; however, risk is currently estimated to be an additional 420 per million.

Highlights of 2004

EPA Designations

Although listed among 474 U.S. counties that do not meet the federal eight-hour ozone (smog) standard, San Diego County was ranked among the least critical.

The Environmental Protection Agency (EPA) ranked counties that are not in compliance at five levels with “severe” being the most serious and “basic” being the least problematic.

San Diego County was designated as a “basic” nonattainment area for the new federal eight-hour ozone standard.

In late 2004, EPA also included San Diego among the 225 counties nationwide as violating new federal standards for fine particulate matter (PM_{2.5}). Based on more recent 2004 particulate monitoring data, San Diego will be designated as an attainment area for PM_{2.5} in early 2005.

RAQs Revision

The 2004 Triennial Regional Air Quality Strategy (RAQS) revision outlines San Diego’s continuing progress toward achieving state clean air standards. The California Clean Air Act requires air districts who do not meet state standards to update their strategies every three years.



Local residents were able to test drive zero-emission, hydrogen-powered fuel cell vehicles outside the County Administration Center at the “Cruisin’ Southern Cal” road rally. The District provided air quality information at this and 30 other public outreach events.

The revised strategy identified eight new control measures for ozone precursors to be evaluated including an enhanced vapor recovery program; further control of solvent cleaning operations, stationary internal combustion engines, stationary combustion turbines, industrial and commercial boilers, and new residential water heaters; and controls for small boilers and large commercial water heaters.



Kids’ Page

The District launched a new kids’ page with enhanced graphics and easier access to air quality learning activities. By visiting www.sdapcd.org, kids can create an air catcher or tailpipe tester, go on an internet scavenger hunt, complete a crossword puzzle on car care, or earn a Clean Air Patch.

Mowing Down Pollution

The Air Pollution Control District received a California State Association of Counties award for the Lawnmower Emission Reduction Exchange Program. More than 400 County residents exchanged high-polluting gasoline lawnmowers for a clean rechargeable mower at a reduced price at the District’s fifth annual Mowing Down Pollution event.

A gasoline mower can create 40 times more criteria pollution per hour of use than a late model automobile, while the replacement electric mowers emit zero pollutants.

Best Workplaces for Commuters

The Air Pollution Control District was awarded the “Best Workplaces for Commuters” designation by the Environmental Protection Agency and the U.S. Department of Transportation. By meeting a National Standard of Excellence in commuter benefits, the District was recognized for its efforts to reduce traffic congestion, employee stress, and air pollution.



Enhanced Vapor Recovery

The District held a public meeting in September to consider the proposed adoption of new rules governing the transfer of gasoline from mobile transport tanks into stationary underground storage tanks and from stationary underground storage tanks into vehicle fuel tanks.

Volatile organic compound (VOC) emissions from gasoline service stations are currently regulated by District rules. The new regulations will replace these outdated rules, incorporate the state's Enhanced Vapor Recovery program, and further reduce VOC emissions from gasoline transfer and dispensing operations.

Diesel ATCM

In 2004, the District began implementing the new statewide diesel engine Air Toxics Control Measure (ATCM) to control diesel particulate emissions from approximately 1,200 stationary engines in the county.

Diesel engine exhaust particulates have been identified by the state as a toxic air contaminant. Exposure to diesel particulate matter may cause cancer, heart and lung damage, and other health problems. Under the California Health and Safety Code, the District is required to implement and enforce state ATCMs.

The District provided compliance assistance training in November to owners and operators of diesel engines to assist in complying with the new state regulation.

Training for Dry Cleaners

In 2004, the District began offering the Dry Cleaning Trained Operator Initial Certification and Recertification Courses as part of the Small Business Assistance Program. The courses are designed to help dry cleaners comply with the state Air Toxic Control Measure.

Other training courses offered included: motor vehicle and mobile equipment refinishing operations, metal parts and products coating operations, wood products coating operations, polyester resin operations, and marine coating operations.



The District repowered three marine vessels in 2004 with cleaner burning diesel engines.

Other Accomplishments

- Finalized customer-focused permit application web pages to enable applicants to easily locate needed information.
- Added Equipment Specific Permitting Guidelines to the website that contain everything an applicant needs to know to apply for a permit for a specific piece of equipment (engine, paint booth, etc.).
- Created guidance documents to assist regulated sources to comply with vapor recovery permit conditions.
- Added compliance inspection checklists for all source categories to the website.
- Distributed and administered \$1.24 million in alternative fuel and cleaner engine emission reduction contracts including programs to encourage alternative transportation to and from work, to repower off-road and agriculture equipment, and to purchase 20 CNG fuel buses.
- Allocated \$367,500 to retrofit 51 existing, in-use diesel school buses with particulate filters at seven county school districts.
- Developed and adopted an over-the-counter permitting program for gasoline station emission control system upgrades.
- Completed continuous emission monitor certifications for utility customers.
- Completed 10,315 permit unit inspections and 476 complaint investigations in 2004.

Attainment Status

A *designation* is the term used to describe the air quality in a given area for any of six common pollutants known as *criteria pollutants* that can be found all over the United States. These pollutants can impact health, harm the environment, and cause property damage. The U.S. Environmental Protection Agency (EPA) calls these pollutants “criteria” air pollutants because they are regulated by developing health-based criteria (science-based guidelines) and then using these guidelines as the basis for setting permissible levels.

The United States government has identified health standards for ozone (smog), carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, and inhalable particulates (those smaller than 10 microns are commonly called PM₁₀ and those fine particles 2.5 microns or smaller are called PM_{2.5}). California regulates the same pollutants plus three others: sulfates, visibility-reducing particulates, and hydrogen sulfide.

Clean air standards establish the maximum level of a given air pollutant that can exist in the outdoor air. One set of limits (called the primary standard) protects health; another set of limits (called the secondary standard) aims to prevent environmental and property damage. A geographic area that meets or does better than the primary standard is designated an attainment

area; areas that don’t meet the primary standard are called nonattainment areas. If the available data do not support a designation of attainment or nonattainment, the area is designated as unclassified.

San Diego County reached a major milestone when it was redesignated in 2003 as an attainment area for the federal one-hour ozone standard. The one-hour ozone standard was attained when each monitoring site in the region had no more than three days in a three-year period with a maximum hourly average concentration exceeding the standard.

San Diego must now focus its efforts on attaining the federal eight-hour ozone standard, which is based on a running eight-hour average. To minimize fluctuations due to weather, the values are interpreted differently than the previous one-hour standard. The eight-hour standard is attained when the three-year average of the fourth highest monitored day’s value is less than 8 pphm for all monitoring sites.

California has also enacted its own clean air standards. San Diego still has not met the more restrictive state one-hour ozone standard, although the number of days when the state standard is exceeded has declined significantly in the past decade.

Both state and federal standards for carbon monoxide, nitrogen dioxide, sulfur dioxide, and lead have been attained.

San Diego meets the federal PM₁₀ standards but was designated “unclassifiable” before PM₁₀ monitoring data was available to support a designation of attainment.

In 2005, EPA will designate San Diego County as an attainment area for the PM_{2.5} standard, based on 2002-2004 data.

San Diego does not meet the stringent state PM₁₀ standard, which is not met anywhere in the state except Lake County. Designations for the state PM_{2.5} standard have not yet been determined.

This table to the left shows the San Diego Air Basin’s federal and state designations.

San Diego’s Air Quality Designations

	Federal Designation	State Designation
Ozone (one hour)	Attainment	Nonattainment
Ozone (eight hour)	Nonattainment	(no state standard)
Carbon Monoxide	Attainment	Attainment
PM 10	Unclassifiable	Nonattainment
PM 2.5	(to be attainment in 2005)	(to be designated)
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 Index (AQI)

The Air Quality Index was established by the U.S. Environmental Protection Agency (EPA) to help the public understand what local air quality means 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. The AQI enables one to easily determine when air pollution levels are high so activities can be modified.

The AQI uses a numerical scale ranging from 0 to 500, with 0 representing pristine air. The higher the AQI value, the greater the level of air pollution and the greater the health danger. An AQI of 100 usually corresponds to the federal standard for that pollutant.* So values below 100 are generally thought of as satisfactory, whereas values above 100 are considered to be unhealthy – at first for sensitive groups of people, then for everyone as the AQI values get higher.



The AQI's easily understandable information about daily levels allows people to modify their activities when air pollution levels are high.

Air quality is measured by a network of monitors that record actual pollutant concentrations or mass. These raw measurements are converted using a formula developed by EPA which relates similar degrees of health effects to AQI's scale.

An AQI value for an area is calculated for each of the major pollutants: ground-level ozone, particulate matter (PM_{2.5} and PM₁₀), carbon monoxide, sulfur dioxide, and nitrogen dioxide. The highest of the values for the individual pollutants becomes the AQI value for that day. Since San Diego is in attainment for all but ozone and particulates, the AQI will be for either ozone or particulates, depending on which is forecast to be higher for that day. Ozone is predominantly the pollutant of concern during the summer months while PM_{2.5} results in higher AQIs during the fall and winter months.

The AQI scale has been divided into distinct categories, each corresponding to a different level of health concern. In addition, a specific color has been assigned to each of the health risk categories to make it easier for people to understand quickly the significance of air pollution levels in their communities.

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 you go in the U.S.

*For PM_{2.5}, the AQI is set at 150 rather than 100.

Air Quality Index Categories

301-500 Hazardous	Health warning of emergency conditions
201-300 Very Unhealthy	A health alert – everyone may experience more serious health effects
151-200 Unhealthy	Everyone may begin to experience health effects
101-150 Unhealthy for Sensitive Groups	Sensitive individuals may experience health effects
51-100 Moderate	Air quality is acceptable
0-50 Good	Air quality is satisfactory

Smog Formation & Transport

Meteorology and terrain play major roles in ozone (smog) formation in San Diego County. Generally, low wind speeds or stagnant air coupled with warm temperatures and cloudless skies provide for optimum conditions.

Ozone is formed in the atmosphere when precursor emissions (oxides of nitrogen and volatile organic compounds) react in the presence of sunlight. Because of the time required for the chemical reaction to take place, peak ozone concentrations often occur far downwind of the precursor emissions.

Monitoring data shows the greatest number of days exceeding the ozone standards occurs at the Alpine monitoring station. Located 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 from motor vehicles and industry are generated in the populated coastal plain and are blown inland by the onshore breeze to the lower mountain slopes. A temperature inversion layer can trap these pollutants against the mountain slopes causing ozone levels to increase.

San Diego's temperature inversion is formed when warm, dry air overlies the cool, moist marine air. Hovering around 2,000 feet above sea level, this

inversion doesn't allow pollutants emitted at ground level to disperse into the air above the inversion layer, keeping pollutants below the inversion layer at higher concentrations.

San Diego's smog problem is further complicated by transported emissions from the South Coast Air Basin (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.

Analysis of San Diego's air pollution shows that emissions

transported from South Coast were a key factor on 9 of the 12 days when air quality levels exceeded the state ozone standard in 2004. Of the 8 days when the federal eight-hour ozone standard was exceeded, all of the days were significantly impacted by transport.

Pollution is often transported from South Coast when northerly winds move ozone trapped aloft within the inversion layer southward into San Diego County. This transported ozone layer aloft most often impacts the Alpine monitoring site.

Transport can also occur when relatively mild Santa Ana winds blowing toward the southwest transport South Coast's polluted air out over the ocean, and the sea breeze brings the polluted air onshore into San Diego County, impacting the coastal monitoring sites.

Inland transport occurs when air from South Coast's inland areas moves south along the I-15 corridor.

Even without transport, San Diego has enough local emissions to cause exceedances of the state and the federal eight-hour ozone standards. This generally requires a multi-day period of light winds, hot temperatures, and plenty of sunshine. The increased traffic from summertime tourism also adds to locally-generated emissions, further intensifying ozone concentrations.



The lower mountain slopes east of the dense urban areas of San Diego experience the highest levels of ozone (smog).

Monitoring Network

The San Diego Air Basin covers 4,225 square miles and comprises all of San Diego County, however, emissions are concentrated mainly in the western portion of the county.

The Air Pollution Control District continuously samples pollutant levels at ten monitoring stations located throughout this region.

The public can check pollutant levels by location on the District's web site at www.sdapcd.org (on the air quality page under hourly pollution data).

The web site also contains a daily air quality forecast and a report by monitoring station of the previous day's high using the Air Quality Index. This information is also available on the District's 24-hour message line at (858) 650-4777.



Monitoring Stations in San Diego County

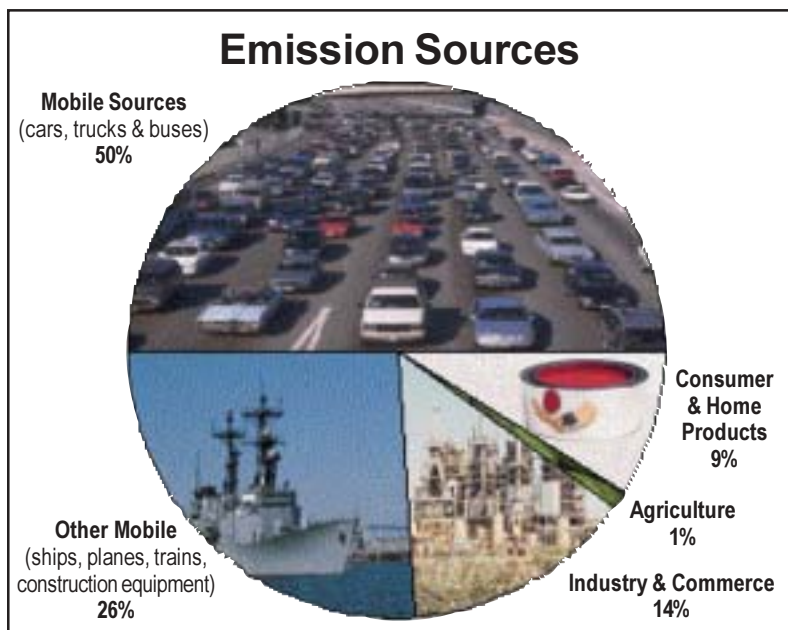
Pollution Sources

Motor vehicles are the biggest source of air pollution in San Diego County. Cars, trucks and other motor vehicles produce half of the smog-forming emissions, emit toxic air contaminants, and contribute significantly to particulate matter levels.

California was the first state to recognize the impact of motor vehicle emissions on air quality.

Statewide programs encourage cleaner fuels, hybrid/electric cars, and alternative means of transportation.

Unlike particulate and air toxic emissions which can be emitted directly from a vehicle's tailpipe, smog forms in the atmosphere from the photochemical reaction of volatile organic compounds (VOCs) and oxides of nitrogen (NOx). VOCs and NOx are both emitted by motor vehicles.



The state's Bureau of Automotive Repair administers the Smog Check program. Not all vehicles must get a smog check. 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. Some vehicles that fail their smog inspections emit such high levels of pollution that a category, called Gross Polluter, was created.

While on-road vehicles are the largest contributors to mobile source emissions, they are only part of the problem. Off-road sources such as utility engines, construction and farm equipment, ships, planes, trains, and off-highway recreational vehicles are also significant sources.

About the District

The District works hard to protect the people and the environment of San Diego County from the harmful effects of air pollution.

As part of our clean air strategy, we do the following:

- Prepare clean air plans to identify how much pollution is in our air, where it comes from, and how to control it most effectively.
- Develop local air quality rules and regulations.
- Monitor the county’s air quality through a network of monitoring stations and perform air quality modeling and laboratory analysis.
- Inventory toxic air emissions and assess the health risks of those emissions.
- Prepare stationary source emission inventories and evaluate special projects that may impact air quality.
- Conduct inspections and help local businesses understand and comply with federal, state, and local air pollution control laws.
- Issue permits to limit air pollution.
- Advise permit holders when new rules are adopted and provide formal training to explain the new requirements.
- Work with local businesses to find ways to prevent pollution through new technologies and process changes.
- Perform and witness field testing of stationary sources of air pollution.
- Educate the community on their role in cleaning up our air.

The five members of San Diego County Board of Supervisors comprise 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, fees charged to local businesses and industries, and vehicle registration fees.

The District’s Director is responsible for all District programs, making policy recommendations to the Board, and implementing Board decisions. The Director also participates in forming federal and state policy and legislation on 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.

Customer Service Commitment

Our Customer Service commitment is to know our customers, what they want and expect, and make meeting those expectations a top priority throughout the organization.

We will accomplish this in partnership with our customers and in a continuous process improvement environment. We will maintain a customer-friendly attitude in providing high-quality technical service in a responsive and efficient manner.

Air Quality Permits

The District maintains more than 12,500 active air quality permits.

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 for any process or 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 healthful air quality.

In addition, the District manages a program to issue operating permits for larger sources that release pollutants into the air under Title V of the federal Clean Air Act.

Monitoring

District technicians and chemists continuously maintain and operate sophisticated electronic analyzers and sensors at ten monitoring stations located throughout the county to determine the type and level of pollutants in the outside air. Our quality assurance program ensures valid and representative air pollution data from each monitoring station.

District meteorologists use data collected from the monitoring sites to assess the county's air quality status and forecast daily pollution levels. Daily readings and next-day forecasts are recorded (including a Spanish version) on a 24-hour phone message line at (858)650-4777 and on the District's web site at www.sdapcd.org. Agricultural burn permit holders can also find out whether air quality conditions permit or prohibit open burning.

Compliance

The District's regulatory compliance staff conducts more than 10,000 inspections a year to ensure that regulated sources operate in compliance with permit conditions and all applicable regulations. Field staff inspect both permitted and non-permitted sources of air contaminants. The District also ensures that federal requirements for asbestos removal are being met.



An air pollution engineer checks equipment at the South Bay Power Plant. Power generation contributes to air pollution.



District chemists set up test equipment for a particulate test of a diesel engine at the Pt. Loma Wastewater Plant.

District inspectors respond to about 500 public complaints a year on air quality matters ranging from dust from grading operations to odors from automotive paint shops. Citizens can report any suspected air quality violations by calling (858)650-4550 or through the District's web site at www.sdapcd.org.

Clean Air Plans

The District prepares and implements long-term regional plans to reduce unhealthful pollution levels. As required by the 1988 California Clean Air Act, the District developed its Regional Air Quality Strategy outlining specific plans to attain state standards and continues to produce triennial reports on air quality progress and emission reduction programs.

In addition, the District is responsible for San Diego's portion of California's State Implementation Plan, a collection of the regulations used by the state to reduce air pollution to levels prescribed by the federal government.

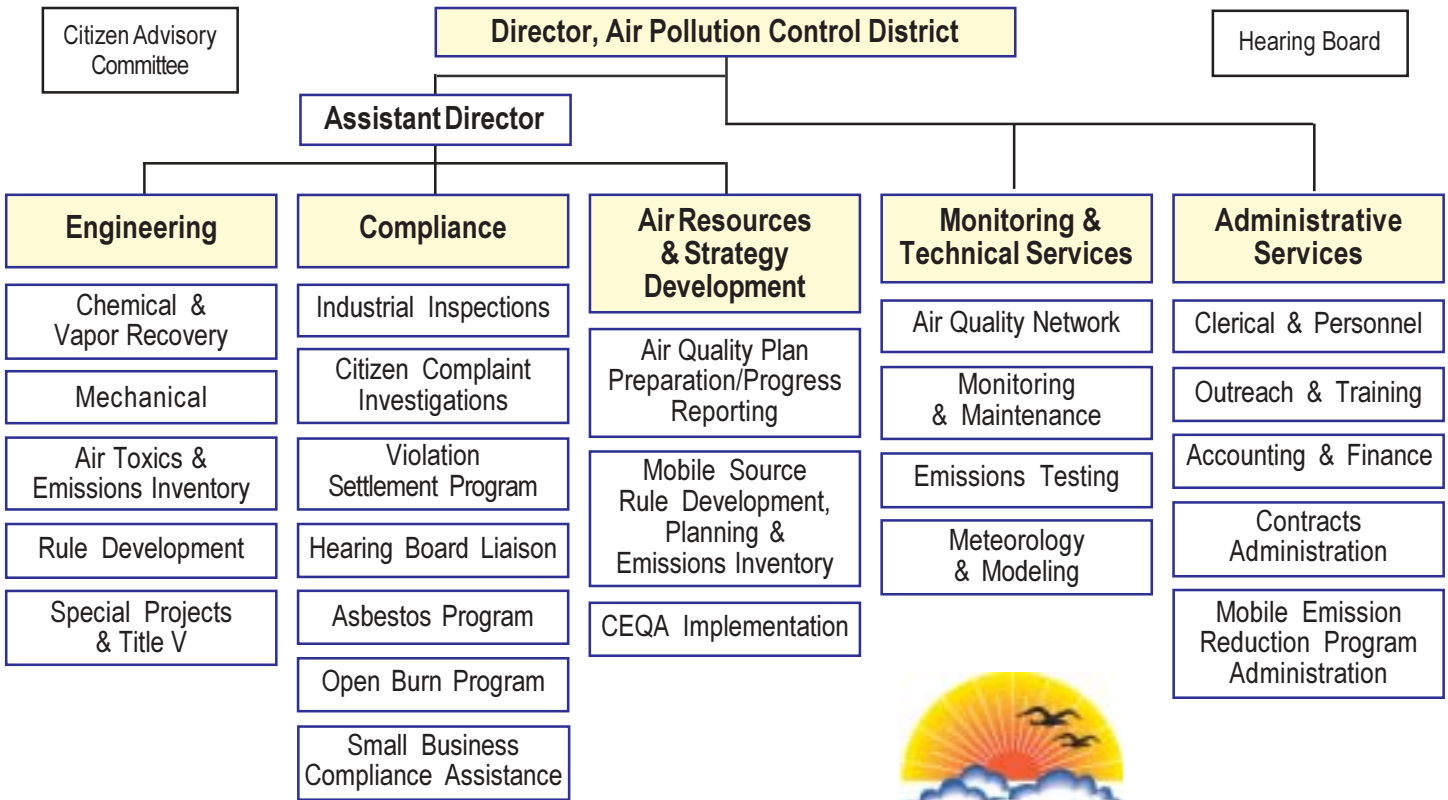
Mobile Source Emission Reduction Programs

The District 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.

The District has also developed a technical assistance program to help reduce vehicle emissions through more efficient land use planning.

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
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Ten 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) 650-4700
Air Quality Forecast Message	(858) 650-4777
Burn Forecast for Open Burning	(858) 650-4777
Citizen/Odor Complaints	(858) 650-4550
Community Outreach	(858) 650-4707
Small Business Assistance (with air quality rules) ..	(858) 650-4549
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
Freon Recovery (EPA)	(800) 296-1996
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 ..	(800) COMMUTE
Weather	(619) 297-2107