



Air Quality in San Diego County

2003 Annual Report



Working Together for Clean Air

San Diego County achieved an important goal for regional air quality when the U.S. Environmental Protection Agency (EPA) officially recognized the region as having acceptable air quality in terms of one-hour exposures to ozone, commonly called smog. Innovative programs to reduce air pollution have significantly lowered smog levels despite the County's continuing growth and expanding motor vehicle usage.

Now we face our next challenge. That is to meet EPA's prescribed limits for an eight-hour period. Exposure to smog at lower levels for periods longer than one hour has been determined to cause adverse health effects, according to EPA medical studies. Although San Diego County only exceeded the eight-hour ozone standard on six days in 2003, the fewest days ever, much more work must be done to meet the more health-protective criteria.

In 2003, County residents were reminded that we cannot take our beautiful blue skies for granted. The smoke from huge firestorms in late October formed an enormous blanket, filling the air with small particles. Each time we took a breath, these particles irritated our lungs. Breathing the air during the fires was a sharp reminder that we must always work together to improve the air we breathe.

As we head into the future, we will continue to work with local industry, environmental groups, government agencies, and the public to preserve our greatest resource of all – our air!

Sincerely,

Dianne Jacob, 2004 Chairwoman
San Diego County Air Pollution Control Board



2003 Annual Report

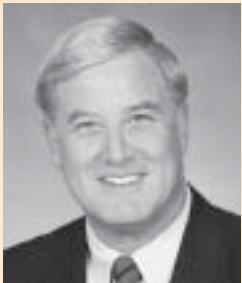
Air Quality in San Diego County

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.

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San Diego Air Pollution Control Board



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The Year's Air Quality

The devastating fires that hit San Diego County in late October 2003 adversely affected air quality in the San Diego Air Basin. Many air quality monitoring sites recorded high levels of various pollutants during the fires (October 26-30, 2003) including several exceedances of federal and state air quality standards. Also, ash from the wildfires that was deposited on the ground was later swept up by high winds contributing to elevated levels of particulates at several sites weeks after the fire.

This exceptional event did not affect San Diego County's continued compliance with the federal 1-hour ozone (smog) standard. On July 28, 2003, the region was redesignated as an attainment area for the federal 1-hour ozone standard.

Although this standard was exceeded on one day in 2003, air quality over a three-year period is used to determine attainment. To achieve attainment, the ozone clean air standard must not be exceeded more than three times during a three-year period at any monitoring site. San Diego met that requirement.

During the fires on October 28, the federal and state 8-hour carbon monoxide standards were exceeded at Escondido. However, since this was due to an exceptional event, the air basin continues to be in compliance with the carbon monoxide standard.

The firestorm affected particulate levels most dramatically. The $PM_{2.5}$ air quality levels

during the fires were four to five times the federal standard. San Diego's air quality was declared to be "unhealthy" on three days and reached "very unhealthy" levels twice. Levels at Escondido reached the highest or "hazardous" levels on October 28. (See pages 10-11.)

And in the weeks following the fires, high winds from the east stirred up the ash affecting air quality. In contrast to the very small $PM_{2.5}$ combustion aerosols that dominated the area during the fires, the particle size of the ash was considerably larger, predominantly PM_{10} .

Other criteria pollutants – nitrogen dioxide, sulfur dioxide, and lead – were not significantly affected by the wildfires.

Several air toxic gaseous compounds and metals were elevated during the fire, however, most levels were below peak concentrations measured during the past three years.



Wildfires ravaged San Diego County in October 2003 creating a blanket of smoke.

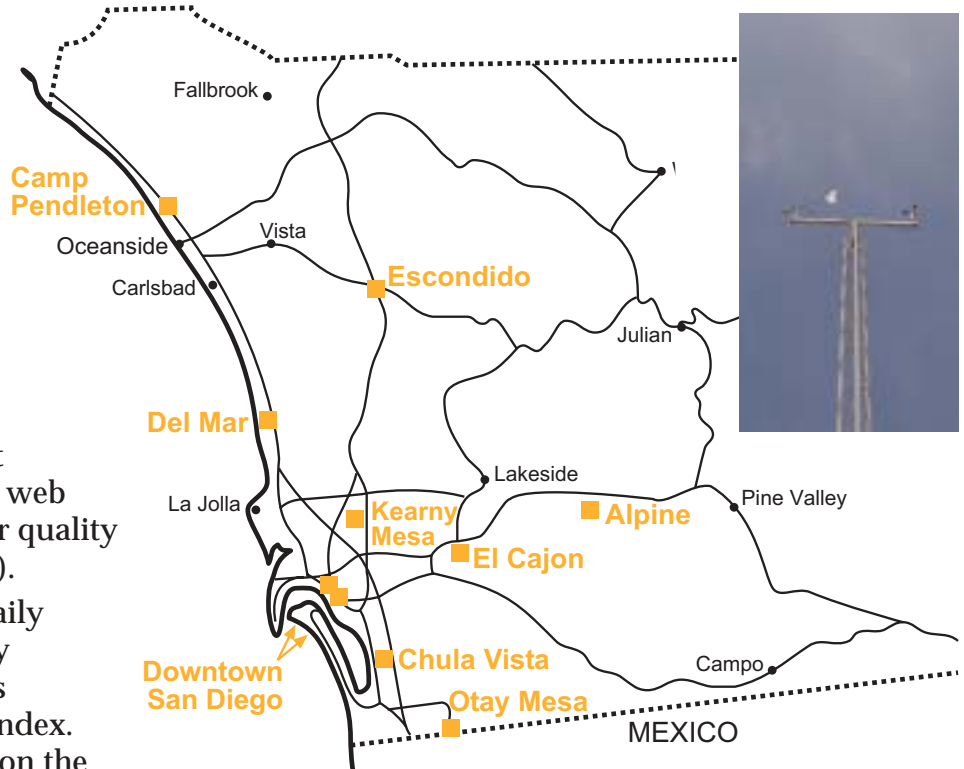
Monitoring Network

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.



Particulate monitors on the roof of the San Diego downtown monitoring station sample inhalable particles.
photo by Jerry Hunter

The United States government has identified health standards for six criteria pollutants: ozone (smog), carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, and inhalable particulates (those smaller than 10 microns are commonly called PM₁₀ and those 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.

Although a dirty-looking sky may be the more obvious effect of air pollution, the health problems it causes are by far more serious. Clinical studies show that chronic exposure to polluted air reduces lung capacity, lowers stamina, and leaves people more susceptible to long-term respiratory problems.



Attainment Status

Criteria air pollutants 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.

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 called 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 1-hour ozone standard. The 1-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. During the three-year period 1999-2001, three monitors in San Diego County each had only one exceedance, and the other seven monitors had none. Thus, the standard was attained.

San Diego must now focus its efforts on attaining the federal 8-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 1-hour standard. The 8-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 1-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. Sulfur dioxide standards have never been exceeded. The federal nitrogen dioxide standard has not been exceeded since 1977, and the state standard since 1988. The federal standard for lead has not been exceeded since 1980 nor the state since 1987. Carbon monoxide's federal and state standards have not been exceeded since 1990 except during the firestorms.

Prior to this year, the federal PM₁₀ standards had never been violated in San Diego County. However, EPA designated the region “unclassifiable” before PM₁₀ monitoring data were available to show the area is in attainment.

The following table shows the San Diego Air Basin's federal and state designations for each criteria pollutant.

San Diego's Air Quality Designations

	Federal Designation	State Designation
Ozone (one hour)	Attainment	Nonattainment
Ozone (eight hour)	(to be designated in 2004)	(no state standard)
Carbon Monoxide	Attainment	Attainment
PM 10	Unclassifiable	Nonattainment
PM 2.5	(to be designated in 2004)	(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

Ozone

Historically, San Diego County’s primary air pollution problem has been ozone, the chief component of smog.

Although air quality has improved dramatically in the region because of effective emission reduction programs for motor vehicles and industry, smog levels exceeded the state 1-hour ozone standard on 23 days in 2003. The federal 1-hour standard was exceeded only one day and the federal 8-hour standard was exceeded on six days.

The state 1-hour ozone standard is 9 parts per hundred million (pphm). The federal 1-hour is 12 pphm and the federal 8-hour is 8 pphm based on a running eight-hour average. Although it appears to be more stringent, the federal 8-hour standard has a longer averaging period than the state 1-hour; and multi-hour averages are always lower than their highest single hour. Therefore, California’s 1-hour standard of 9 pphm is slightly more health protective than the federal 8-hour standard.

Ozone, a colorless gas composed of three oxygen atoms, 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 unhealthful to breathe.

Ozone occurs naturally in the earth’s upper atmosphere where it forms a protective layer. International and U.S. efforts are well underway to protect this beneficial ozone threatened by man-made chemicals.

Ground-level ozone is not directly emitted as a pollutant but rather is formed in the atmosphere when precursor emissions (oxides of nitrogen and reactive organic gases) react in the presence of sunlight. Nitrogen oxides are produced by on and off-road motor vehicles and fuel-burning industrial equipment. Reactive organic gases are emitted by motor vehicles, solvents, consumer products, and the petroleum industry.

Meteorology and terrain play major roles in ozone formation. Generally, low wind speeds or stagnant air coupled with warm temperatures and cloudless skies provide for optimum conditions. As a result, summer is generally the peak ozone season. Because of the time required for the chemical reaction to take place, peak ozone concentrations often occur far downwind of the precursor emissions.

Individual site 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.

Emissions from motor vehicles and industry that are generated in the populated coastal plain are blown inland by the onshore breeze to the lower mountain slopes. San Diego County’s abundant sunshine causes these emissions to “cook” and create ozone. A temperature inversion layer can trap these pollutants against the mountain slopes causing ozone levels to increase.

Ozone	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	0	0	0.075	Oct. 28
El Cajon	0	1	0	0.102	Sept. 21
Kearny Mesa	0	2	0	0.107	Oct. 19
Del Mar	0	0	0	0.092	Oct. 17
Escondido	0	3	0	0.105	Sept. 21
Alpine	1	17	6	0.125	Sept. 21
Downtown San Diego	0	0	0	0.075	April 9
Camp Pendleton	0	4	0	0.099	Oct. 16
Otay Mesa	0	1	0	0.097	Oct. 13
Basinwide	1	23	6	0.125	Sept. 21

San Diego's temperature inversion is formed when warm, dry air overlies the cool, moist marine air. Warmer air overlying cooler air doesn't allow pollutants emitted at ground level to disperse into the air above the inversion layer. This keeps pollutants below the inversion layer at higher concentrations. The inversion layer frequently hovers around 2,000 feet above sea level. In Southern California, the inversion is a predominant feature during the smog season — April through October.

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 18 of the 23 days when air quality levels exceeded the state ozone standard in 2003. Of the six days when the federal 8-hour ozone standard was exceeded, all six 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 8-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.

Ozone impacts lung function by irritating and restricting the airways forcing the respiratory system to work harder in order to provide oxygen. Chronic exposure reduces lung capacity, lowers stamina, and leaves people vulnerable to long-term respiratory problems. Smog is especially harmful for children whose lungs are still developing, senior citizens whose immune systems are weakening, and those who suffer from asthma and chronic lung disease.

The last health advisory for smog in San Diego County occurred in July 1998. A health advisory is issued when smog levels reach 15 pphm, and the public is advised to reduce vigorous outdoor activity.

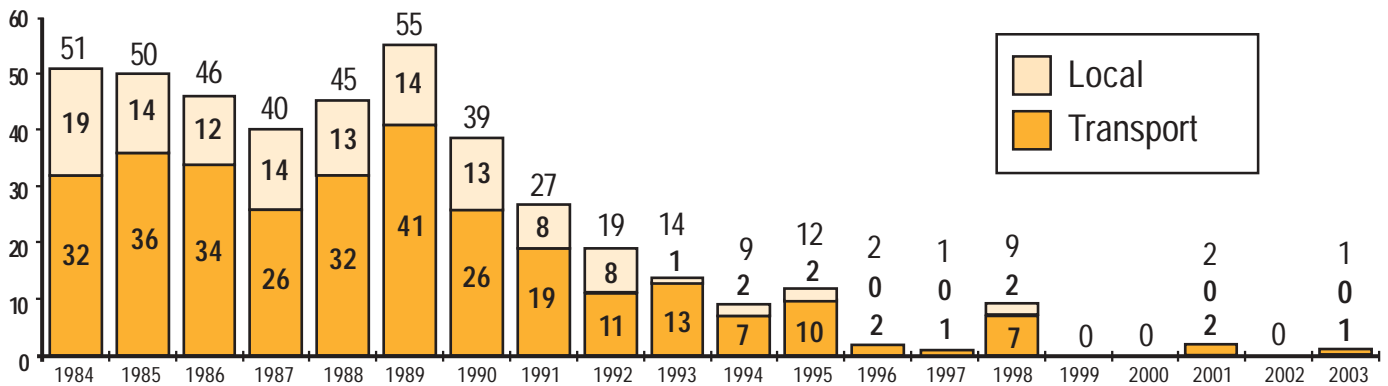
San Diego has not recorded a Stage 1 episode since 1991 nor a Stage 2 episode since 1979. A Stage 1, commonly called a smog alert, occurs when smog levels reach 20 pphm and a Stage 2 alert is called at 35 pphm.



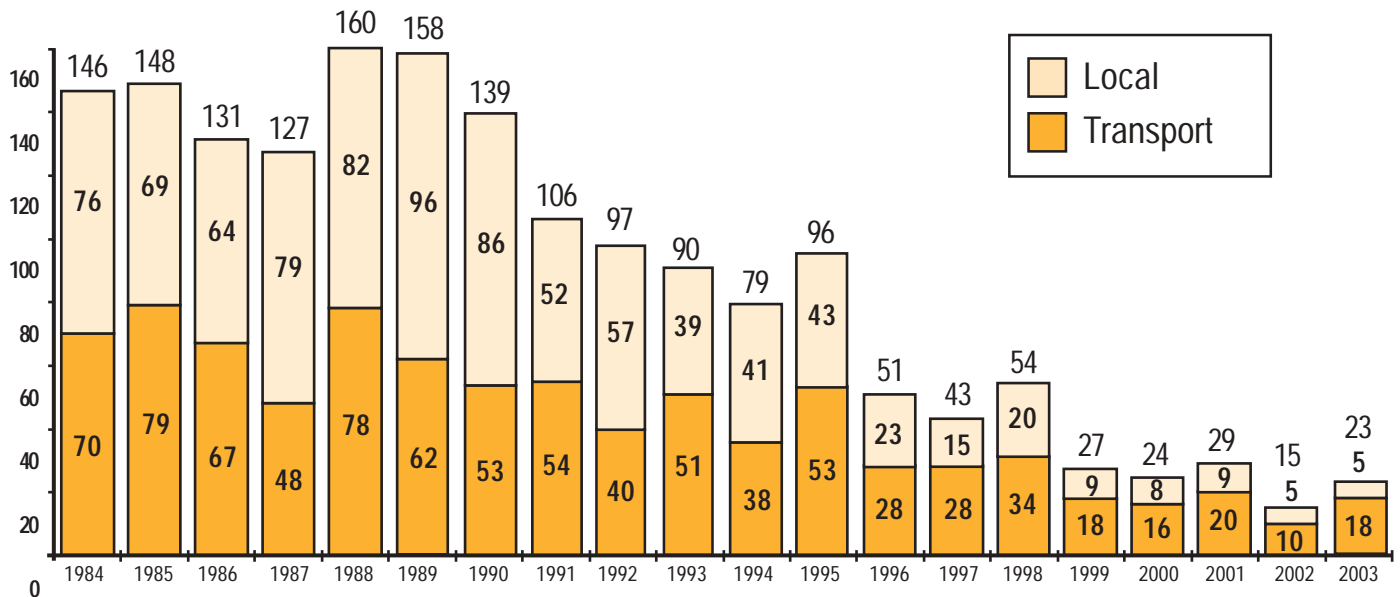
An electronic instrument technician performs routine maintenance on an ozone instrument to ensure its accuracy.

photo by Jerry Hunter

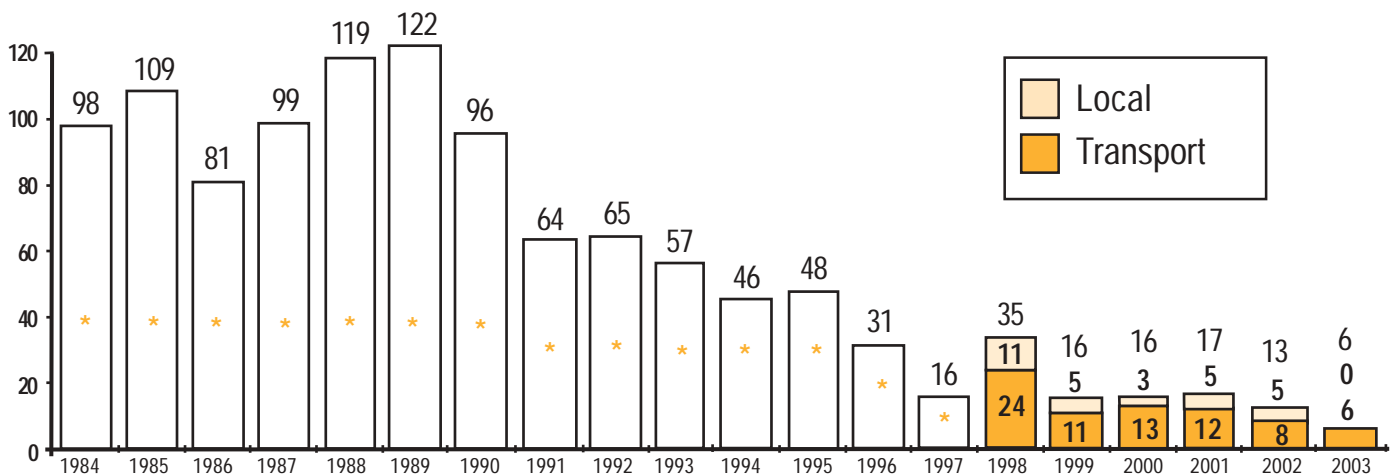
Number of Days Exceeding Federal 1-Hour Ozone Standard



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.



Particulates

Data from real-time particulate matter (PM) samplers were invaluable during the fall wildfires. Once a smoke plume reached the ground, PM levels began to soar. The real-time monitors provided up-to-date PM levels enabling the District to warn the public about unhealthy conditions.

Particulate matter from fires is made up primarily of soot, carbon, and entrained dust. The air quality standards for particles are divided into two size ranges: those less than or equal to 10 microns in diameter (PM₁₀) and those less than or equal to 2.5 microns (PM_{2.5}). Real-time PM data are compiled as two averaging times, 1-hour and 24-hour; however, only the 24-hour data can be compared directly to the air quality standards.

The rate particulate matter is generated during a fire varies depending on the fire's size, the fuel involved, and the fire's behavior. Tons of PM can be generated each minute from large fires. On October 27, the 24-hour PM_{2.5} levels in Chula Vista reached 239 µg/m³.

San Diego's air quality was declared to be "unhealthy" on three days during the fire and reached "very unhealthy" levels twice. Escondido's peak levels reached the highest or "hazardous" levels on October 28. (Since air quality standards for particulate matter are based on an annual and a 24-hour sample, data in the tables at right do not reveal these peak concentrations.)

And in the weeks following the fires, Santa Ana winds picked up the ash and spread

it from the foothills and inland areas over much of the metropolitan area, causing particulate levels to again reach "unhealthy" levels. In contrast to the very small PM_{2.5} combustion aerosols that dominated the area during the fires, the particle size of the ash was considerably larger, predominantly PM₁₀.

Although all airborne particles can pose potential health problems, the tiniest particles are the biggest health concern. 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

PM _{2.5}	Annual Arithmetic Mean Federal Standard	Maximum 24-Hour Sample** Not Including Fire Data Federal Standard	Date of Maximum 24-Hour Sample** Not Including Fire Data	Maximum 24-Hour Sample** (includes fire data) Federal Standard	Date of Maximum 24-Hour Sample** (includes fire data)
	15 µg/m ³ State Standard 12 µg/m ³	65 µg/m ³		65 µg/m ³	
Chula Vista	14	41	Dec. 5	239*	Oct. 27
El Cajon	12	33	Jan. 1	***	***
Kearny Mesa	12	30	Jan. 12	170*	Oct. 27
Escondido	14	38	Dec. 31	69*	Oct. 27
Downtown San Diego	15	51	Jan. 23	170*	Oct. 27

*Elevated levels were recorded due to wildfires and subsequent windblown soot and ash.

** Concentrations are averaged over a 24-hour period.

*** There was an equipment malfunction at the El Cajon monitoring station during the fires.

PM ₁₀	Annual Arithmetic Mean Federal Standard	Maximum 24-Hour Sample** Not Including Fire Data Federal Standard	Date of Maximum 24-Hour Sample** Not Including Fire Data	Maximum 24-Hour Sample** (includes fire data) Federal Standard	Date of Maximum 24-Hour Sample** (includes fire data)
	50 µg/m ³ State Standard 20 µg/m ³	150 µg/m ³ State Standard 50 µg/m ³		150 µg/m ³ State Standard 50 µg/m ³	
Chula Vista	27	65	Dec. 5	75*	Nov. 23
El Cajon	34	66	Dec. 5	230*	Nov. 23
Kearny Mesa	29	49	Nov. 29	280*	Nov. 23
Escondido	33	58	Dec. 31	179*	Oct. 29
Downtown San Diego	37	60	Dec. 5	139*	Nov. 23
Otay Mesa	53	130	Dec. 5	130	Dec. 5

*Elevated levels were recorded due to wildfires and subsequent windblown soot and ash.

** Concentrations are averaged over a 24-hour period.



A plume of dust and ash from the San Diego County wildfires is visible blowing over the Pacific Ocean and San Clemente Island in this November 27, 2003, image from NASA's Terra satellite.

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 $PM_{2.5}$.

The federal PM_{10} standards are far less stringent than the state standards. The federal PM_{10} standards have never been exceeded in San Diego County.

The state daily PM_{10} standard is the most stringent. It is not met in San Diego County or most other parts of California.

$PM_{2.5}$ monitoring began in January 1999 at five locations in San Diego County. Three years of data are needed to determine attainment status.

The U.S. Environmental Protection Agency will issue area designations for $PM_{2.5}$ in 2004-2005 with San Diego County anticipated to be nonattainment for the federal annual standard.



Other Pollutants

Carbon Monoxide

Carbon monoxide (CO) gas is formed by incomplete combustion of fuels containing a carbon atom. It can show up in high concentrations near fires, however, 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.

CO can adversely affect respiratory and cardiac functions at concentrations above the air quality standard. It can be harmful both in high concentrations for a short period (one hour) and at moderate concentrations over a longer period (eight hours).

The highest CO concentrations were reported in Escondido during the fires. During an eight-hour interval (4 a.m. to noon) on October 28, the average CO level at Escondido exceeded both state and federal 8-hour CO standards. No individual 1-hour CO standard was exceeded.

Since the fire was an exceptional event, San Diego County continues to have met both federal and state CO air quality standards since 1990.

Nitrogen Dioxide

The brown haze seen in the San Diego skyline on cold mornings is primarily nitrogen dioxide (NO₂). It is one of the pollutants known generically as oxides of nitrogen, a primary ingredient in the formation of smog.

Carbon Monoxide	Max. 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	6.9	Oct. 27	5.4	Oct. 28
Escondido <i>Including fire data</i>	12.7	Oct. 28	10.6	Oct. 28
Escondido <i>Not including fire data</i>	8.9	Feb. 7	3.9	Jan. 17
San Diego Union St.	8.0	Jan. 25	5.1	Jan. 26
San Diego 12th Ave.	5.0	Jan. 15	3.9	Dec. 19
Otay Mesa	7.0	Oct. 18	4.9	Oct. 27

A by-product of combustion, it is emitted from sources such as motor vehicles, industrial boilers, and heaters.

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

San Diego County has not exceeded the federal annual average NO₂ standard since 1978 nor the state 1-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.

Lead

San Diego no longer monitors for lead as levels are well below air quality standards.

Nitrogen Dioxide	Annual Average Federal Standard 0.053 ppm	Max. 1-Hour Concentration in ppm State Standard 0.25 ppm	Date of Maximum Concentration
Chula Vista	0.018	0.102	Oct. 20
El Cajon	0.020	0.130	Oct. 28
Kearny Mesa	0.018	0.084	Oct. 28
Escondido	0.020	0.135	Oct. 28
Alpine	0.014	0.071	Dec. 5
Downtown San Diego	0.021	0.111	Oct. 21
Camp Pendleton	0.012	0.095	Jan. 15
Otay Mesa	0.020	0.148	Oct. 18

Sulfur Dioxide	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	0.004	0.009	0.021	0.030
Downtown San Diego	0.004	0.008	0.019	0.040
Otay Mesa	0.003	0.011	0.018	0.025

Air Toxics

Toxic air contaminants, also called hazardous air pollutants or air toxics, are known or suspected to cause cancer, adverse reproductive effects, and other health impacts.

Air toxics 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.

Air toxics 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.

Overall, emissions from diesel engines are responsible for the majority of the potential air-borne 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.

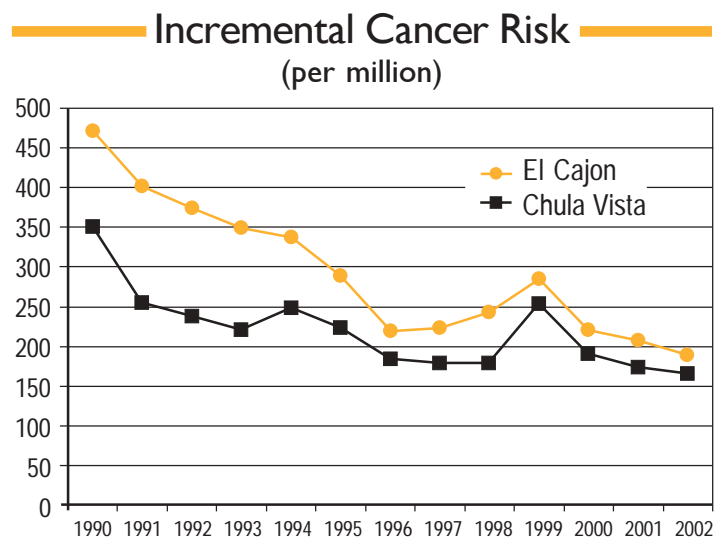
The California Air Toxics “Hot Spots” Information and Assessment Act requires facilities to report emissions of toxic air contaminants to the local air pollution control district. These emission reports are evaluated and facilities that pose a

significant risk to public health must notify local residents of the potential risk and may be required to reduce that risk.

The District is the implementing agency for approximately 1,600 local facilities required to comply with the “Hot Spots” law. An annual progress report is available by contacting the District at (858) 650-4700 or by visiting its web site at www.sdapcd.org.

The District has adopted a local rule which requires evaluation of potential health risks for any new, relocated, or modified emission unit which may increase emissions of toxic air contaminants. The rule requires projects with an increase in cancer risk between one and ten in one million to install toxics best available control technology.

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 on the graph below, incremental cancer risk from levels of toxic air contaminants has decreased by more than half in the past decade.



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 2003

Redesignation

San Diego County was redesignated as an attainment area for the federal 1-hour ozone standard on July 28, 2003. Formal recognition as an ozone attainment area is an important milestone for regional air quality improvement and public health, and reflects the effectiveness of the region's air pollution control program in spite of significant ongoing growth in population and motor vehicle miles traveled.

Wildfires

On October 27, 2003, with strong winds fanning the flames, air pollution in San Diego County reached levels that could endanger public health.

The District's director and meteorologists staffed the County's Emergency Operations Center providing around-the-clock air quality and meteorological information to fire, public safety, and health personnel.

Throughout the firestorms, District staff handled calls from concerned citizens and issued advisories warning of poor air quality to the public including those most at risk with compromised respiratory, cardiovascular, and immune systems. District staff also collected and analyzed wildfire smoke and soot for gaseous, particulate, and toxic constituents.

Following the fires, the District continued to monitor air quality, analyzed ash and particulate matter, answered hundreds of calls from the public and the media regarding air quality and health effects, and issued advisories to caution homeowners and contractors about possible exposures to asbestos and hazardous soot during fire debris removal and smoke and fire damage cleanups.

PM Forecasting

Air quality forecasts were expanded to include daily information on particulate pollution.

Launched on October 1, 2003, the forecasted messages are aimed at protecting the public from a pollutant that is so small it is able to penetrate to the deepest parts of the lungs.

Particulate forecasting was invaluable during the wildfires as it was the primary means to warn people about the health hazards.

After the fires, the District continued to forecast elevated particulate levels and caution the public against strenuous outdoor activities. Over the Thanksgiving holiday, the District advised the public to take precautions against exposure to forecasted unhealthy particulate levels caused by Santa Ana winds blowing dust and soot from the foothills and inland areas over much of the metropolitan area.

Air quality forecasts are reported on a 24-hour message line at (858) 650-4777 and on the District's web site at www.sdapcd.org.



Mowing Down Pollution

More than 400 County residents exchanged high-polluting gasoline lawnmowers for a clean rechargeable mower at a reduced price at the District's fourth 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.

Compliance Assistance

In March, the Compliance Assistance Program launched a new course for polyester resin operations, and, in September, a special training class for marine coating operations was held in conjunction with the Barrio Logan Environmental Justice Demonstration Project.

The District offers industry-specific training courses throughout the year to help customers understand and comply with District rules. Each course explains the applicability, exemptions, and definitions contained in each rule. Special emphasis is given to rule standards and recordkeeping requirements.

Residential Burning

A public meeting was held in November to discuss the implementation of a new California Air Resources Board statewide regulation that prohibits most outdoor burning of residential waste in a large area of eastern San Diego County where outdoor burning of residential waste was previously allowed with a valid permit.

The new regulation is designed to reduce public exposure to dioxins and other toxics from outdoor residential waste burning statewide.

Dry, natural vegetation grown on the property can still be burned outdoors in open piles with a valid permit.

Biowatch

The District began working in 2003 with the Department of Homeland Security to support the bio agent monitoring program called Biowatch.

Emission Reduction Contracts

The Air Pollution Control Board appropriated more than \$7 million in funding in March to implement 52 emission reduction projects and a public education and outreach project. These 52 projects will remove approximately 1,081 tons of oxides of nitrogen and volatile organic compounds emissions from the air over the life of the projects. In addition, 38 of these projects will remove 82 tons of toxic diesel particulate matter.

Title V

The District completed issuing its initial Title V permits to landfills, manufacturing facilities, power plants, naval facilities, publicly-owned treatment facilities, and other major sources. The federal Clean Air Act requires state and local air districts to develop and implement a federal major stationary source permit program.

The District also amended its rules establishing the Title V Operating Permit Program to reflect changes in the air basin's attainment status.

Customer Satisfaction

The District received a 97% customer satisfaction rating in the tenth Countywide Customer Satisfaction Survey conducted in November. The District's courtesy rating was 100%!

Other Accomplishments

- Participated in development of new California rules for portable and stationary diesel engines.
- Identified more than \$1 million in diesel engine emission reduction projects in Environmental Justice areas to be funded with special state monies.
- Streamlined Toxics New Source Review permitting procedures to reduce costs and record keeping.
- Developed "customer focused" permitting guidance web pages for the District's web site which will launch in early 2004.
- Conducted a public workshop regarding implementation of new federal requirements for municipal solid waste landfills.
- Initiated simplified permit conditions for coating operations subject to the District's new source review rule for toxic air contaminants.
- Enabled contractors to submit vapor recovery testing notifications via the District's web site.
- Created 5,000 clean air calendars in partnership with San Pasqual Academy, a residential-education campus for foster teens, to promote community air quality awareness.
- Amended Rule 69.4 for stationary reciprocating internal combustion engines to address EPA-identified deficiencies.

About the District

The San Diego County Air Pollution Control District is the local regulatory agency responsible for protecting the public's health from the adverse impacts of air pollution. This is accomplished through an integrated monitoring, engineering, and compliance operation that focuses on achieving and maintaining state and federal air quality standards.

The San Diego County Board of Supervisors serves as the Air Pollution Control Board and adopts local rules for controlling air pollution and allocates funding for District operations. These funds come from the state and federal governments, fees charged to local businesses and industries, and vehicle registration fees.

Appointed by the Board, the District's Director is responsible for all District programs. The Director also participates in forming federal and state policy and legislation on air quality.

Engineering

The Engineering Division evaluates and issues air quality permits to ensure proposed



District engineers process 1,300 permit applications each year.

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.

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 are necessary to ensure that polluting operations are controlled to the maximum degree technically and economically feasible and that such operations do not interfere with the attainment and maintenance of healthful air quality.

In addition, Engineering 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.

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

Compliance

The Compliance Division ensures 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.

Resolving complaints about pollution from industrial facilities is another major job of this division. Citizens can report any suspected air quality violations by calling (858) 650-4550 or on the District's web site at www.sdapcd.org.

Compliance assists industry, especially small businesses, in understanding and complying with District rules and state law. When new rules are adopted, advisories are sent to all those affected to explain the new requirements. Formal training and individual assistance is also provided.



Air pollution chemists analyze toxic metals, carbonyls, and volatile organic compounds in the District laboratory.

Monitoring & Technical Services

This division maintains ten monitoring stations that continuously record pollution levels in the San Diego Air Basin – which covers the 4,225 square miles of San Diego County.

Daily air quality readings and next-day forecasts are recorded on a 24-hour phone message line at (858) 650-4777 and on the District's web site at www.sdapcd.org. Advance notice is provided if there is the possibility of a health advisory or smog alert. Agricultural burn permit holders can also find out whether air quality conditions permit or prohibit open burning.

Monitoring also conducts and witnesses field testing of stationary sources of air pollution, conducts laboratory analysis for air contaminants, prepares regular and special air quality reports, and is responsible for all air quality modeling.

Air Resources & Strategy Development

Air Resources & Strategy Development (ARSD) prepares long-term regional plans to reduce unhealthy pollution levels. ARSD is responsible for the District's Regional Air Quality Strategy as required by the 1988 California Clean Air Act, outlining specific plans to attain state air

quality standards and producing triennial reports on air quality progress and emission reduction programs.

In addition, ARSD maintains 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.

Participating with transportation agencies, ARSD ensures regional transportation projects are designed to achieve air quality standards. ARSD has also developed a technical assistance program to help reduce vehicle emissions through more efficient land use planning.

Administrative Support

The Administrative Support Division prepares and administers the District budget, performs business and accounting tasks, provides permit system support, and produces informational materials on reducing air pollution.

This division also administers funds that are used to reduce regional mobile source emissions including 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. It also coordinates an electric lawnmower incentive program.



The District administers funds for emission reduction projects such as repowering off-road construction equipment from high-emitting diesel engines to cleaner diesel.



Air Quality Index

In 2003, the Air Quality Index (AQI) became an invaluable tool in reporting air quality levels during the fall wildfires. In previous years, the index was used in San Diego County to report only smog levels. However, in October 2003, reporting was expanded to include particulate levels as well.

Local television and newspaper reporters used the AQI to provide valuable information to local residents about particulate levels and to convey what precautions people should take to protect themselves on days when levels exceeded health standards and posed a threat to public health.

The purpose of the AQI is to help the public understand what local air quality means to health. Different pollutants affect health at different concentrations. By relating similar degrees of health effects to a uniform scale, an index 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.

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 U.S. Environmental Protection Agency 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.

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.

Air Quality Index Categories

Air Quality Index Values	Levels of Health Concern	Colors	Cautionary Statements
0-50	Good	Green	Air quality is satisfactory.
51-100	Moderate	Yellow	Air quality is acceptable.
101-150	Unhealthy for Sensitive Groups	Orange	Members of sensitive groups may experience health effects.
151-200	Unhealthy	Red	Everyone may begin to experience health effects.
201-300	Very Unhealthy	Purple	A health alert – everyone may experience more serious health effects.
301-500	Hazardous	Maroon	Health warning of emergency conditions.

*For PM_{2.5}, the AQI index is set at 150 rather than 100 to cover both the 24-hour and the annual standards.

Pollution Sources

Cars, trucks, and other motor vehicles continue to produce about half of the smog-forming emissions in San Diego County. In addition, motor vehicles 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 that encourage cleaner fuels, hybrid/electric cars, and alternative means of transportation significantly reduce precursor (smog-forming) emissions as well as decrease particulate and air toxic emissions.

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 in law to identify and encourage the repair of the worst polluting vehicles on California's roadways.

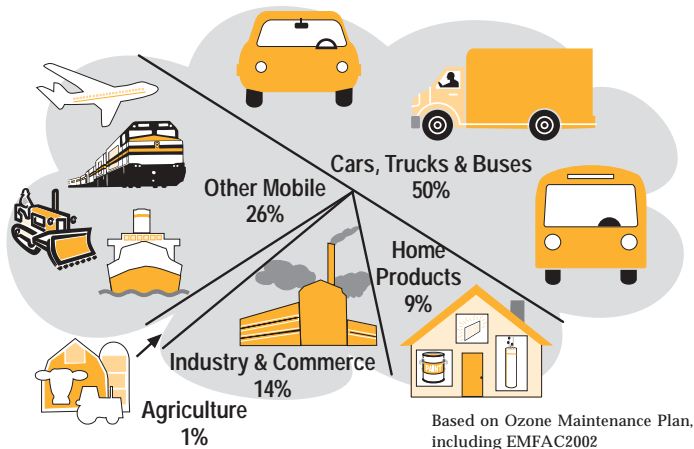
The state's Air Resources Board works with manufacturers to develop engine and emission control systems that reduce specific pollutants. Many newer vehicles are designed to produce even lower levels of emissions than required. These vehicles, called Low-Emission Vehicles, are included in a buyer's guide at www.arb.ca.gov.

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.

Helpful Phone Numbers

Air Quality Forecast	(858) 650-4777
Air Resources Board	(916) 322-2990
American Lung Association	(619) 297-3901
ARB Motor Vehicle Hotline	(800) 242-4450
Asthma & Allergy Foundation ..	(800) 7ASTHMA
Bus/Transit Information	(800) COMMUTE
Burn Forecast for Open Burning ...	(858) 650-4777
Carpool Information	(800) COMMUTE
Caltrans General Information	(619) 688-6670
Caltrans Info Future Freeways	(619) 688-6785
Clerk of the Board	(619) 531-5600
Coastal Commuter Train	(800) COASTER
Environmental Protection Agency ..	(415) 947-8000
Freon Recovery (EPA)	(800) 296-1996
Hazardous Materials Information ..	(619) 338-2231
Odor Complaints	(858) 650-4550
Recycling (non hazardous waste)	(877) 713-2784
Small Business Compliance Assistance	
(with air quality rules)	(858) 650-4549
Smog Check Test Only Stations	(800) 952-5210
Smoking Vehicle Hotline	(800) 28-SMOKE
South Coast Air Quality Management District	
(Los Angeles/Riverside area)	(909) 396-2000
Stratospheric Ozone Hotline	(800) 296-1996
Trolley Information	(800) COMMUTE
Weather	(619) 297-2107

Emission Sources



San Diego County Air Pollution Control Board

Director, Air Pollution Control District

Assistant Director

Administrative Services

Outreach & Training

Clerical & Personnel

Contracts Administration

Accounting & Finance

Mobile Emission Reduction Program Administration

Engineering

Compliance

Air Resources & Strategy Development

Monitoring & Technical Services

Chemical & Vapor Recovery

Mechanical

Air Toxics

Rule Development

Emissions Inventory

Special Projects & Title V

Industrial Inspections

Citizen Complaint Investigations

Violation Settlement Program

Hearing Board Liaison

Asbestos Program

Open Burn Program

Compliance Assistance

Small Business Assistance

Air Quality Plan Preparation/ Progress Reporting

Mobile Source Rule Development, Planning & Emissions Inventory

CEQA Implementation

Air Quality Network

Monitoring & Maintenance

Emissions Testing

Meteorology & Modeling



AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN DIEGO

Permit & General Information
(858) 650-4700

Air Quality Forecast Message
(858) 650-4777

Citizen Complaints
(858) 650-4550

Community Outreach
(858) 650-4707

Smoking Vehicle Hotline
(800) 28-SMOKE

Citizen Advisory Committee

Hearing Board