

# **AIR QUALITY IN 2002**



**AIR POLLUTION CONTROL DISTRICT**  
**COUNTY OF SAN DIEGO**

# Clearer Skies

The new century has ushered in consistent improvement to air quality in San Diego County. Gone are the days of smog alerts, when the eyes water and the throat burns. Innovative programs to reduce air pollution have significantly improved air quality despite San Diego County's continuing growth and expanding motor vehicle usage. As a result, County residents are breathing the cleanest air on record.

We have a lot to celebrate. Attaining the federal one-hour clean air standard for ozone (smog) is a tremendous achievement.

But there is still more work to be done. Our beautiful blue skies can be deceptive. Even though the smog is not as visible or irritating as it once was, it still can be harmful.

Recent health studies have shown that longer-term exposures at smog levels below the federal one-hour standard can cause adverse health effects. As a result, the federal government has updated its standard with one that averages levels during every eight-hour period. Although San Diego County exceeded that standard 13 days last year, the fewest days ever, much more must be done to meet the federal eight-hour standard.

Federal law also allows individual states to have stronger standards than those set by the federal government. California recognized the need for more protective health standards when it adopted its own clean air act in 1988. San Diego County exceeded the state's one-hour standard on 15 days last year, also down from previous years, but we do not yet meet California's standard.

Meeting these two tough standards won't be easy, but it can be done. As we head into the future, we will continue to work with industry, environmental groups, government agencies, and the public to make unhealthy air quality levels only a memory.

San Diego County's air is cleaner, but further improvements are needed to ensure our health and the health of future generations. I know that, with your continued support, we can achieve the cleanest, safest air for everyone.



**Greg Cox, Chairman  
San Diego Air Pollution Control Board**

**San Diego  
Air Pollution  
Control Board**



**District 1  
Greg Cox**



**District 2  
Dianne Jacob**



**District 3  
Pam Slater**



**District 4  
Ron Roberts**



**District 5  
Bill Horn**



# Air Quality in 2002

*San Diego County is a beautiful place to live. From the ocean sands to the forested mountain slopes, we have ideal climate in which to enjoy the region's natural beauty.*

*Sometimes this beauty allows us to forget we have air pollution, especially when compared to areas where the problem is more visible.*

*But just because you can't see it doesn't mean it isn't here. That's why the San Diego Air Pollution Control District keeps a close watch on air pollution levels day in and day out. Rain or shine, the District monitors the air we breathe throughout San Diego County's great outdoors – from the seaside community of Del Mar to the inland foothills of Alpine.*

*This report details our long-term progress toward clean air and what still needs to be done. Let's make San Diego known not only for its beautiful beaches, but also for its clear blue skies.*

---

## Table of Contents

The Year's Air Quality .....	4
Air Quality Index .....	10
Attainment Status .....	11
Air Toxics .....	12
Community Involvement .....	13
2002 Highlights .....	14
About the District .....	16
Smog Forming Emissions .....	18
10 Ways to Clear the Air .....	19
Helpful Phone Numbers .....	19
Organization Chart .....	20

---

# The Year's Air Quality

## Ozone

San Diego County has made great strides towards clean air. In 2002, San Diego chalked up a year of no exceedances of the federal one-hour ozone (smog) standard for the third time.

With exceedances of the federal one-hour standard virtually eliminated, it's time to shift focus to the more stringent state one-hour and the federal eight-hour standards. An "exceedance" of a standard occurs when the pollutant concentration is greater than the prescribed limit at one or more monitoring stations.

Smog levels exceeded the state one-hour ozone standard on 15 days in 2002, down from 97 in 1992. The federal eight-hour ozone standard was exceeded on 13 days compared to 65 days in 1992. This decrease in the number of days with unhealthy air represents significantly improved air quality in San Diego County.

Ozone, a colorless gas composed of three atoms of oxygen, is the primary component of smog. Ozone levels are measured at nine monitoring stations located throughout San Diego County.

Ozone can be good or bad depending on where in the atmosphere it is located.

Ozone occurs naturally in the upper atmosphere – 10 to 30 miles above the earth's surface – where it forms a protective layer that shields the planet from the sun's ultraviolet radiation. International and U.S. efforts are well underway to protect this beneficial ozone threatened by manmade 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. Ozone at ground-level is unhealthy to breathe.

Ozone is a strong irritant that can reduce lung function and make it more difficult to breathe. 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 weakened, and those who suffer from asthma or chronic lung or heart disease.

To protect public health, clean air standards have been established by both the state and federal governments.

Ozone					
Station	Number of Days Exceeding Federal Standard One-Hour Concentration >0.125 ppm	Number of Days Exceeding Federal Standard Eight-Hour Concentration >0.085 ppm	Number of Days Exceeding State Standard One-Hour Concentration >0.095 ppm	Maximum One-Hour Concentration in ppm	Date of Maximum One-Hour Concentration
Chula Vista	0	0	1	0.12	Sept. 1
El Cajon	0	0	2	0.10	Aug. 9
Kearny Mesa	0	1	3	0.11	Sept. 21
Del Mar	0	0	1	0.10	Sept. 21
Escondido	0	0	2	0.10	Sept. 1
Alpine	0	12	13	0.12	June 6
Downtown SD	0	0	0	0.09	Sept. 21
Otay Mesa	0	1	2	0.11	Sept. 1
Camp Pendleton	0	0	0	0.09	May 12
<b>BASINWIDE</b>	0	13	15	0.12	June 6

*Note: When two or more monitoring stations record an exceedance on the same day, it counts as one basinwide day. Basinwide days are not a summation of all monitoring stations days.*

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.

Individual site data shows the greatest number of days exceeding the standards occurs at the Alpine monitoring station. Located about 2,000 feet above sea level, the Alpine site measures smog levels downwind of the dense urban areas of San Diego.

The area's geography and weather contribute to ozone levels on the west-facing mountain slopes, where Alpine is located, that are typically higher than the rest of the county. Emissions from motor vehicles, industry, and the public are generated in the populated coastal plain and are blown inland by the onshore breeze to the lower mountain slopes from Palomar Mountain south to the Mexican border. The area's abundant sunshine causes these emissions to "cook" and create ozone. A temperature inversion layer can trap these "cooking" pollutants against the mountain slopes and prevent them from rising.

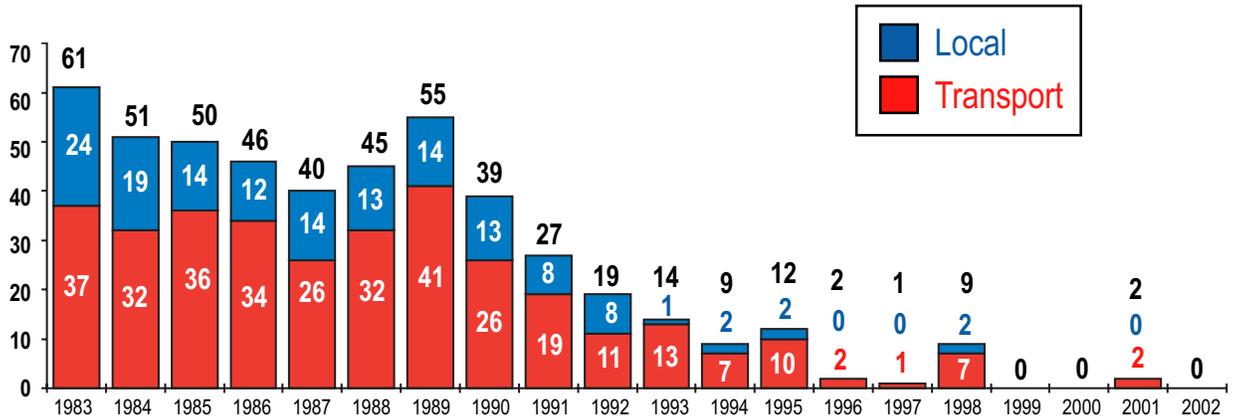
San Diego's temperature inversion is formed when warm, dry air overlies the cool, moist marine air. Warmer air overlying cooler air doesn't allow pollutants emitted at ground level to disperse into the air above the inversion layer. This keeps pollutants below the inversion layer at higher concentrations. 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.

The problem is further complicated by emissions transported here from the South Coast Air Basin (the metropolitan areas of Los Angeles, Orange, San Bernardino and Riverside Counties). These emissions often increase the ozone measured at District monitoring sites, leading to exceedances of air quality standards.

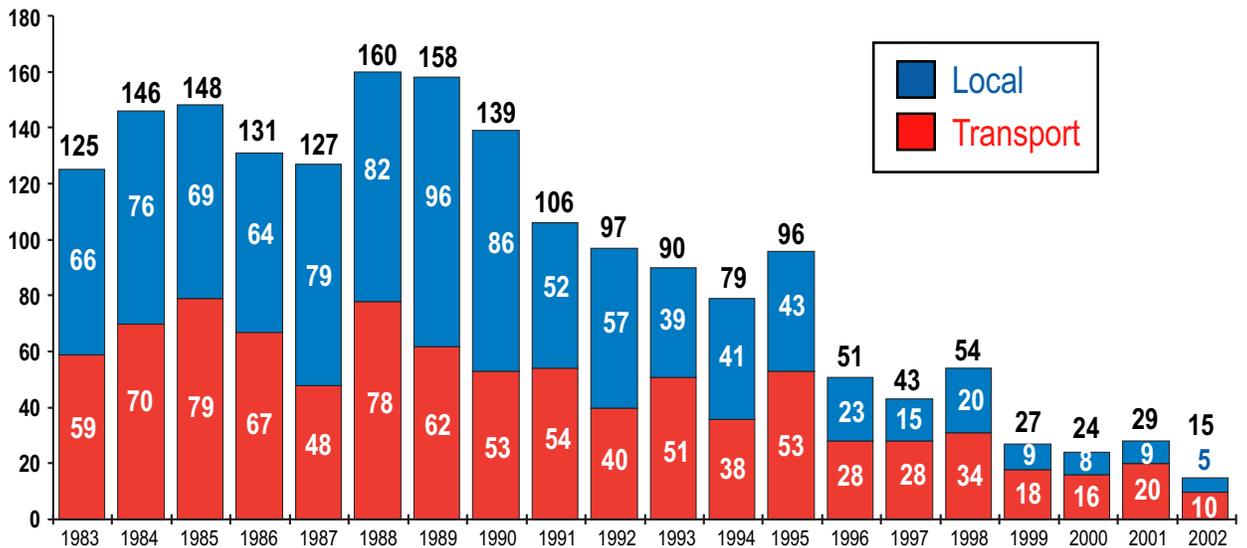
Pollution is often transported into San Diego County from South Coast when northerly winds move ozone trapped aloft within the inversion layer southward into San Diego County. This transported ozone layer aloft most often impacts the Alpine monitoring site.



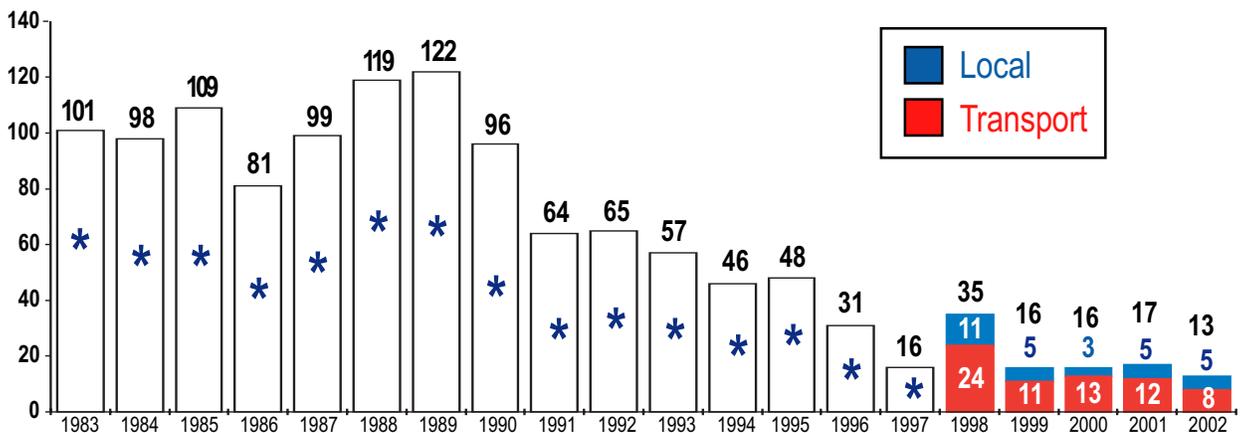
## Number of Days Exceeding Federal Clean Air Standard (One Hour)



## Number of Days Exceeding State Clean Air Standard (One Hour)



## Number of Days Exceeding Federal Clean Air Standard (Eight Hour)



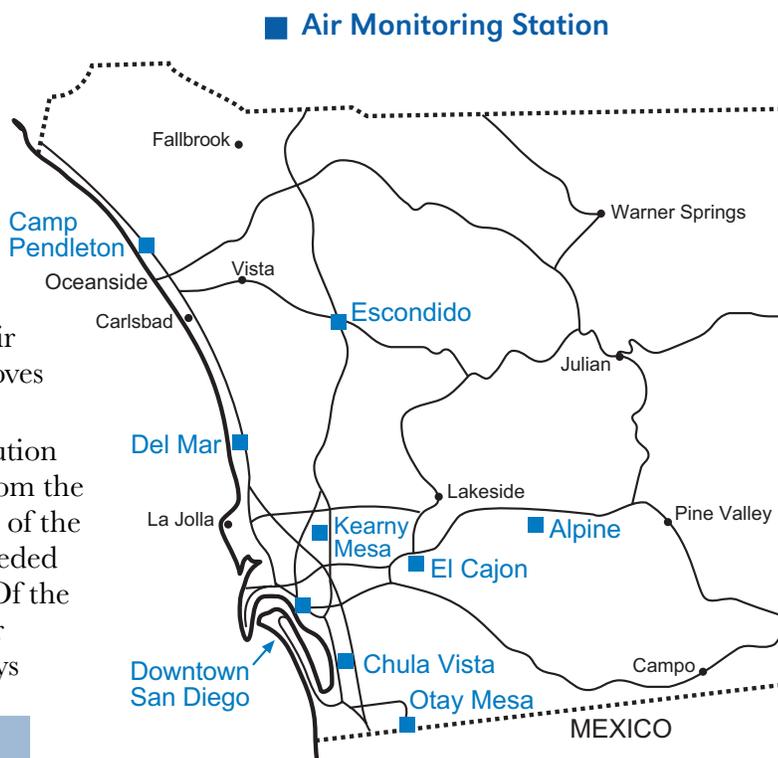
\* The breakdown between local and transported emissions is not available prior to 1998.

## San Diego County Monitoring Stations

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.

Analysis of San Diego’s air pollution shows that emissions transported from the South Coast were a key factor in 10 of the 15 days when air quality levels exceeded the state ozone standard in 2002. Of the 13 days when the federal eight-hour ozone standard was exceeded, 8 days



were impacted by transport from the South Coast and 5 days were due to locally generated pollution.

Even without transport, San Diego has enough local emissions to cause exceedances of the state and eight-hour clean air 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.

To measure ground-level ozone concentrations in the air, large glass tubes – with what looks like an inverted funnel on top – draw outside air into an ozone monitor. Inside this instrument, the sampled air is exposed to ultraviolet (UV) light. Ozone absorbs the UV light; other pollutants do not. Proportional to the ozone concentration in the specific air sample, the remaining UV light is measured and converted to an ozone concentration. Air quality data is then recorded on computer and analyzed at the District’s office.

The public can check pollutant levels by location on the District’s web site at [www.sdapcd.co-san-diego.ca.us](http://www.sdapcd.co-san-diego.ca.us) (on the air quality page under hourly pollution data).

The web site also contains a daily air quality (smog) 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.



*Air is drawn into an ozone monitor by large glass tubes.*

## Particulate Matter

Particulate matter is a complex mixture of solid and liquid particles composed of chemicals, soot, and dust. Primary particulates such as smoke and dust are emitted into the air directly as particles. Secondary particulates are chemicals that condense into particle form in the atmosphere from pollutants emitted as gases.

Although all airborne particles can pose potential health problems, tiny particles are the biggest health concern. Air quality standards are focused on the concentration of these tiny, microscopic particles that can bypass the respiratory tract's natural filtering system and be inhaled deep into the lungs.

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, very small particles are captured on uncontaminated, pre-weighed filters. These filters are then weighed again and the particulate concentrations determined.

Those particles 10 microns or less in diameter, called PM<sub>10</sub>, have been used since the 1980's as a measure of particulate air quality. Due to the highly resource intensive nature of this monitoring, samples are collected once every six days.

There are both federal and state, annual and daily (24-hour) PM<sub>10</sub> air quality standards. The federal standards are far less stringent than the state standards. With the exception of Otay Mesa, federal standards have not been exceeded in San Diego County. The location of the Otay Mesa site at the border crossing, which has a high volume of vehicular traffic, contributes to the higher level of PM<sub>10</sub>. The more stringent state PM<sub>10</sub> daily standard was exceeded at most locations in the county, but it is not met anywhere in the state except rural Lake County.

In 1997, the U.S. Environmental Protection Agency (EPA) added new particulate standards for PM<sub>2.5</sub>, a component of PM<sub>10</sub>.

PM<sub>2.5</sub> monitoring began in January 1999 at five locations in the county. Samples are collected daily at three core sites – El Cajon, Escondido, and downtown San Diego – and every third day at Chula Vista and Kearny Mesa. In 2002, all locations met the federal 24-hour standard for PM<sub>2.5</sub>, but three of the five sites exceeded the federal annual standard.

EPA will issue area designations in 2004-2005 with San Diego anticipated to be nonattainment (although current PM<sub>2.5</sub> levels are nearly in attainment).

PM <sub>10</sub>			
Station	Annual Arithmetic Mean Federal Standard 50 µg/m <sup>3</sup> State Standard 20 µg/m <sup>3</sup>	Max. 24-Hour Sample Federal Standard 150 µg/m <sup>3</sup> State Standard 50 µg/m <sup>3</sup>	Date of Maximum 24-Hour Sample
Chula Vista	27	50	Dec. 4
El Cajon	35	61	June 19
Kearny Mesa	24	47	Dec. 4
Escondido	27	51	Sept. 5
Downtown SD	35	85	Dec. 4
Otay Mesa	55	130	Nov. 28

PM <sub>2.5</sub>			
Station	Annual Arithmetic Mean Federal Standard 15 µg/m <sup>3</sup> State Standard 12 µg/m <sup>3</sup>	Max. 24-Hour Sample Federal Standard 65 µg/m <sup>3</sup>	Date of Maximum 24-Hour Sample
Chula Vista	13.89	41.0	Jan. 2
El Cajon	15.34	39.3	Jan. 1
Kearny Mesa	12.85	36.5	Jan. 2
Escondido	16.13	53.6	Jan. 1
Downtown SD	15.54	46.9	Nov. 3

## Carbon Monoxide

San Diego County has met both federal and state carbon monoxide air quality standards since 1990.

Carbon monoxide forms when the carbon in fuels does not completely burn. Primarily from motor vehicle exhaust, the highest concentrations are found in areas with congested or high volumes of traffic and usually during cold weather. Cold temperatures make combustion less complete and cause inversions that trap pollutants low to the ground.

An odorless, colorless gas, carbon monoxide is harmful when inhaled because it restricts the blood's ability to carry oxygen to the body's tissues.

Carbon Monoxide				
Station	Max. 1-Hour Concentration in ppm Federal Standard 35 ppm State Standard 20 ppm	Date of Maximum 1-Hour Concentration	Max. 8-Hour Average Concentration in ppm Federal Standard 9 ppm State Standard 9.0 ppm	Date of Maximum 8-Hour Concentration
Chula Vista	4.3	Feb. 13	2.6	Feb. 27
Curbside	8.2	Feb. 7	3.6	Feb. 23
Escondido	8.5	Jan. 21	3.9	Jan. 21
Downtown SD	5.0	Jan. 7	3.5	Feb. 23
Otay Mesa	8.4	Jan. 11	4.7	Jan. 11

Nitrogen Dioxide			
Station	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	0.093	Nov. 6
El Cajon	0.020	0.085	Nov. 6
Kearny Mesa	0.019	0.080	Feb. 26
Escondido	0.021	0.084	Feb. 27
Alpine	0.013	0.068	Jan. 8
Downtown SD	0.022	0.102	Nov. 20
Camp Pendleton	0.013	0.109	Feb. 21
Otay Mesa	0.021	0.126	Oct. 8

## Nitrogen Dioxide

Nitrogen dioxide is a reddish brown, highly reactive gas 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 automobiles and power plants.

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

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

## Sulfur Dioxide

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

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

Sulfur Dioxide				
Station	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	0.012	0.028	0.044
Downtown SD	0.003	0.007	0.015	0.028
Otay Mesa	0.004	0.009	0.016	0.020

## 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.

# Air Quality Index (AQI)

The U.S. Environmental Protection Agency (EPA) established the Air Quality Index (AQI) in June 2000 to incorporate the eight-hour federal air quality standard for ground level ozone and the new standard for fine particulate matter (2.5 micrometers in size or smaller). The AQI replaced the Pollutant Standards Index (PSI) that had been in use since 1976.

The purpose of an index 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.

Similar to the old PSI, 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. Like the PSI, an AQI of 100 usually corresponds to the federal standard for that pollutant. So values below 100 are generally thought of as satisfactory. When values are above 100, air quality is 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 such as 8 parts ozone per hundred million parts air or 8 pphm. 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 five major pollutants regulated by the federal Clean Air Act: ground-level ozone, particulate matter, 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.

Whereas the PSI had only five categories, the AQI adds a sixth category – unhealthy for sensitive groups – between the moderate and unhealthy designations. This category recognizes that some people are more likely to be affected at lower levels than the general public. When AQI values are between 101 and 150, some sensitive individuals may experience health effects. The general public is not likely to be affected when the AQI is in this range.

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.



Good	<b>Green</b>	0 to 50
Moderate	<b>Yellow</b>	51 to 100
Unhealthy for Sensitive Groups	<b>Orange</b>	101 to 150
Unhealthy	<b>Red</b>	151 to 200
Very Unhealthy	<b>Purple</b>	201 to 300

# Attainment Status

Clean air standards establish the maximum level of a given air pollutant that can exist in the outdoor air without unacceptable effects on human health or public welfare. When an area meets a standard for a specific pollutant, it is designated as being in attainment for that pollutant. If it does not meet the standard, it is designated nonattainment. If the available data do not support a designation of nonattainment or attainment, the area is designated as unclassifiable.

San Diego County reached a major milestone when it attained the federal one-hour clean air standard for ozone.

The one-hour ozone standard is attained when each monitoring site in the region has 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 and the Air Pollution Control District submitted a request for redesignation in 2002.

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 0.085 ppm for all monitoring sites.

The State of California has also enacted its own clean air standards. San Diego still has not met the more restrictive state one-hour ozone standard.

As seen from the graphs on page 6, steady progress is being made towards attainment of the federal eight-hour and state one-hour standards.

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 and the state standard since 1987. Carbon monoxide's federal and state standards have not been exceeded since 1990.

The federal PM<sub>10</sub> standards have never been violated in San Diego. However, the U. S. Environmental Protection Agency designated the area "unclassifiable" before PM<sub>10</sub> 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)	<i>(to be designated in 2004)</i>	<i>(no state standard)</i>
Carbon Monoxide	Attainment	Attainment
PM 10	Unclassifiable	Nonattainment
PM 2.5	<i>(to be designated in 2004)</i>	<i>(to be designated)</i>
Nitrogen Dioxide	Attainment	Attainment
Sulfur Dioxide	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	<i>(no federal standard)</i>	Attainment
Hydrogen Sulfide	<i>(no federal standard)</i>	Unclassified
Visibility	<i>(no federal standard)</i>	Unclassified

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

Working with air toxics differs significantly from working with traditional pollutants because there are a large number of substances that are potentially toxic, there is limited health effects data, and there may be no threshold or safe levels with many toxics.

Since 1970, the federal Clean Air Act has required the Environmental Protection Agency (EPA) to regulate emissions of toxic air pollutants. These regulations are known as the National Emission Standards for Hazardous Air Pollutants (NESHAPs). Federal law identifies 188 hazardous air pollutants.

The state's air toxics program was established in 1983 with the adoption of the Toxic Air Contaminant Identification and Control Act. Under this program, statewide Air Toxic Control Measures (ATCMs) have been developed for gas stations, dry cleaners, sterilizers, chrome platers, and other sources of toxic air contaminants.

In 1987 an additional state law, the Air Toxics "Hot Spots" Information and Assessment Act, was adopted. Under this program, existing facilities are required to report emissions of toxic air contaminants. In addition, facilities that pose a significant risk to public health must notify the local residents of the potential risk and may be required to reduce that risk.

A requirement of the "Hot Spots" Act is for local air districts to provide the public with an annual progress report. A copy of San Diego's current report is available by contacting the District or visiting its web site at [www.sdapcd.co.san-diego.ca.us](http://www.sdapcd.co.san-diego.ca.us).

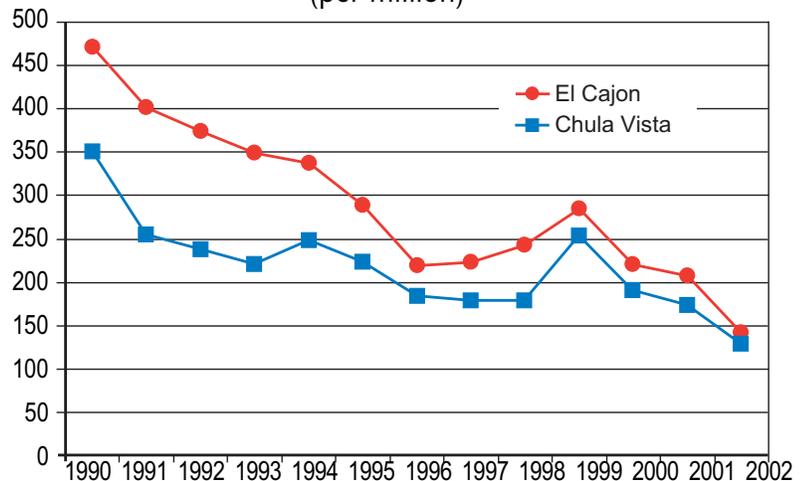
The District has also adopted local Rule 1200 (Toxic Air Contaminants – New Source Review) which requires evaluation of potential health risks for any new, relocated, or modified emission unit which may increase emissions of one or more toxic air contaminants and establishes criteria for approvability of these units.

Since 1990, the District has operated toxic 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 at right, incremental cancer risk has decreased by more than half.

Particulate emissions from diesel-fueled engines are estimated to be responsible for more than 70% of the total ambient air toxics risk known today. Accordingly, the state Air Resources Board has developed a Diesel Risk Reduction Plan, which is intended to reduce diesel particulate emissions and associated cancer risks throughout the state by 75% by 2010 and 85% by 2020. Mobile sources contribute the majority of diesel particulate emissions.

## Incremental Cancer Risk

(per million)



Note: The risk values presented on this graph do not include risk from diesel particulates. Diesel particulates cannot be directly measured.

# Community Involvement

2002

## Barrio Logan

The District is working closely with local and state officials to make environmental justice part of its air quality programs.

Environmental justice is defined as the fair treatment of people of all races, cultures, and incomes with respect to development, adoption, implementation, and enforcement of environmental laws, regulations, and policies.

The community of Barrio Logan is located in a commercial/industrial zone. In December 2001, unexpectedly high levels of hexavalent chromium were detected in a limited area of the community. Hexavalent chromium is a toxic air pollutant for which long-term exposure can increase the risk of cancer even at very low levels.

The District and ARB launched a massive monitoring effort and exhaustive inspections to locate the source of the pollutant and public education efforts to inform residents of the problem. Sampling was conducted at 20 locations from February 23 to May 24, 2002. Updates of the sampling results and preliminary analysis were mailed to local residents in English and Spanish every few weeks throughout the monitoring period.

Enforcement actions at a local chrome plating company led to a settlement agreement ensuring closure and clean-up of the property.



*A Compliance inspector takes solution samples at a Barrio Logan plating shop.*



*Special monitoring equipment was installed at 20 locations in Barrio Logan.*

## Valley Center

When residents of the North County community of Valley Center expressed concern about the number of local children developing cancer, the District stepped in to help them find answers.

The District collected 24-hour integrated air samples for several days in June 2002 and again in the fall at three Valley Center sites. These samples were analyzed for 55 volatile organic compounds (VOCs) including styrene.

The District also surveyed the area for industrial and commercial sources of toxic air contaminants and conducted inspections at local facilities. Even though it is located outside the District's jurisdiction on the Rincon Indian Reservation, the District obtained day-specific styrene usage from Survival Systems International for both sampling periods.

The VOC levels at these Valley Center sites were compared with the VOC levels recorded at El Cajon and Kearny Mesa. Nearly all the VOC levels in Valley Center, including styrene, were lower than the VOC levels measured at either of the other two sites. Most of the compounds detected were consistent with emissions expected from motor vehicle exhaust and home heating fuel combustion.

The special monitoring study detected no unusual or significant concentrations of VOCs, including styrene, in Valley Center.

# Highlights of 2002

## Attainment Redesignation

The San Diego Air Pollution Control Board applied to the federal Environmental Protection Agency for redesignation to attainment in 2002 for the one-hour federal standard for ozone.

Attainment is a significant milestone in San Diego County's clean air effort and demonstrates emission control measures for industries, motor vehicles, and consumer products are working.

The federal one-hour standard is attained if each air monitor has no more than three days in a three-year period with a maximum hourly average concentration above 0.12 parts per million. During the three-year period 1999-2001, three monitors each had only one exceedance, and the seven other monitors had none. Thus, the standard has been attained. Furthermore, in 2002, there were no exceedances of the standard at any monitor, continuing the region's attainment status.

## Cleaner Engines

Thirty-seven projects to reduce emissions from heavy-duty vehicles by replacing older, high-emitting diesel engines with newer, cleaner diesel or dual-fuel engines were funded in 2002.

Heavy-duty diesel engines are high emitters of nitrogen oxides, a precursor to ozone, and the California Air Resources Board has identified diesel emissions as a toxic air contaminant.

The projects – totaling \$1,796,496 – were funded from state Carl Moyer Program funds and emission mitigation fees paid by power plants for excess operations and resulting emissions during the energy crisis.

The Alternative Mobile Source Emission Reduction Credit Program, which enables stationary sources to mitigate an increase in emissions with a reduction from mobile sources, won a National Association of Counties (NACO) Achievement Award.



*Emission reduction programs in 2002 included cleaner trash trucks.*



*The Air Pollution Control District helped the Poway Unified School District purchase new CNG buses.*

## Cleaner School Buses

Six school districts received funds to help replace older (pre-1987) diesel school buses with 27 new compressed natural gas (CNG) buses and 36 new intermediate diesel buses and to retrofit 163 existing diesel buses with particulate matter (PM) filters. Intermediate diesel buses have cleaner oxides of nitrogen and PM emissions than currently required by law.

The more than \$7 million in funding for the buses came from three sources – Vehicle Registration funds, the state's Lower Emission School Bus Program, and local power generation mitigation fees.

## Mowing Down Pollution

More than 600 county residents went home with new electric lawn mowers from the District's third Lawn Mower Exchange Incentive event held in April 2002.

The event enables residents to purchase a new, top-of-the-line rechargeable cordless electric lawn mower at a reduced price when they turned in a high-polluting, working gasoline mower. Operating an older gasoline-powered mower for one hour produces pollution equivalent to about 40 automobiles.

The innovative program won a National Association of Counties (NACO) Achievement Award.

## Power Plant NOx Reduction

Selective catalytic reduction control devices were installed on boilers at the Encina and South Bay power plants to control oxides of nitrogen (NOx) emissions. NOx emissions result from fuel combustion and are ozone precursors. The advanced air pollution control devices reduce NOx emissions by about 85%. When San Diego's two large power plants finish installing the devices on all steam generation boilers in 2003, San Diego County will become one of the few areas in California and the U.S. to have all large utility power plant NOx emissions fully controlled to this level.

## District Rules & Regulations

- **Open Burning** – Rules 101 through 112 were repealed and replaced with a single, new Rule 101 – Burning Control. New Rule 101 continues to require open burning in San Diego County to be conducted in a manner that minimizes emissions and smoke. One of the primary additions to the new rule is the inclusion of state-mandated smoke management requirements. The new rule prohibits open burning of pesticide, fertilizer or chemical containers; drugs and illegal contraband; metal salvaging materials; and other specified materials such as hospital or infectious waste, dead animals, manure, rubber, oil filters, appliances, tires, tar paper, and plastics.
- **Stationary Reciprocating Internal Combustion Engines** – District Rule 69.4.1. requiring Best Available Retrofit Control Technology for reciprocating engines was fully implemented. All owners and operators had to submit documentation by November 15, 2002, which demonstrated compliance with emission limits for oxides of nitrogen, carbon monoxide, and volatile organic compounds.
- **Wood Products** – Rule 67.11.1 was adopted to implement federally-mandated Reasonable Available Control Technology requirements for large wood-coating operations. An existing rule, Rule 67.11, was amended for consistency with the new rule. Wood products coating operations are a source of volatile organic compounds (VOC) emissions. VOCs are emitted from the application and drying/curing of coatings, surface preparation materials and cleaning of coating equipment.
- **New Source Review (NSR)** – Developed revisions to the NSR rules to address concerns expressed by the federal Environmental Protection Agency and to incorporate new state requirements.

## Fall Meetings on ATCM

Three public meetings to discuss the implementation of a new Airborne Toxic Control Measure (ATCM) for emissions of chlorinated toxic air contaminants from automotive maintenance and repair activities were held in the fall. The control measure is designed to reduce public exposure to perchloroethylene (perc), methylene chloride (MeCl), and trichloroethylene (TCE). These three chlorinated compounds are sometimes contained in automotive consumer products used in automotive maintenance or repair activities. Exposure to these three compounds, which are emitted to the air when products containing them are used, may result in cancer and non-cancerous health effects to workers and nearby residents.

## Other Accomplishments

- Developed an Ozone Maintenance Plan to ensure protection from future reclassification to a "severe" ozone nonattainment area for the federal one-hour standard.
- Continued the development of a regional air quality computer model that will simulate ozone formation. By entering emission reductions into the model, the computer will demonstrate the resulting impact on ozone levels.
- Initiated modifications to the air monitoring network to adjust for changes in population based on 2000 census data.
- Enhanced PM<sub>2.5</sub> sampling and hydrocarbon measurements.
- Installed a new ambient air quality monitoring Data Acquisition System.
- Continued priority permitting and emissions testing for power generating equipment. Issued permit for proposed new 500 MW Palomar power plant.
- Continued to implement Title V of the federal Clean Air Act. Title V requires state and local air districts to develop and implement a federal major stationary source permit program. In 2002, the District issued seven initial Title V permits to landfills, manufacturing plants, and publicly-owned treatment works.
- Provided technical leadership in the development of diesel engine test procedures and tools for estimating cumulative toxic air impacts.
- Implemented a new special air monitoring program to enhance citizen safety.

# What We Do

## 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.*

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.
- Issue permits to limit air pollution.
- Monitor the county's air quality through a network of monitoring stations and perform air quality modeling and laboratory analysis.
- Perform and witness field testing of stationary sources of air pollution.
- 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.
- 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.
- 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 provides an avenue for public input into District policy. The Board 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.



## 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 nine 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.co.san-diego.ca.us](http://www.sdapcd.co.san-diego.ca.us). 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 6,000 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.

Compliance inspectors respond to about 700 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.co.san-diego.ca.us](http://www.sdapcd.co.san-diego.ca.us).

## Mobile Source Emission Reduction Programs

The District also administers funds that are used to reduce regional mobile source emissions. Since 1993, more than 100 local projects have been funded through the Vehicle Registration Fund.

With the addition of the Carl Moyer Memorial Air Quality Standards Attainment Program in 1999 and the Lower-Emission School Bus Program in 2001, 329 polluting diesel transit buses and 88 diesel school buses have been replaced with cleaner Compressed Natural Gas (CNG) buses. Another 49 older, dirty diesel school buses were replaced with new "clean diesel" buses, and 317 particulate matter filters were installed on existing diesel school buses. Funds were also used to support the conversion of 109 residential refuse trucks from diesel to dual-fuel and to repower 17 older diesels to new, cleaner-burning diesel.

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

## 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 air quality 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.

## 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.*

# Smog-Forming Emissions

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. Smog is not directly emitted from the tail-pipe but instead forms in the atmosphere from the photochemical reaction of volatile organic compounds (VOCs) and oxides of nitrogen (NO<sub>x</sub>). VOCs and NO<sub>x</sub> are both emitted by motor vehicles.

California was the first state to recognize the impact of vehicle emissions on air quality. The state Air Resources Board (ARB) is responsible for developing statewide programs and strategies to reduce the emission of smog-forming pollutants and toxics by mobile sources.

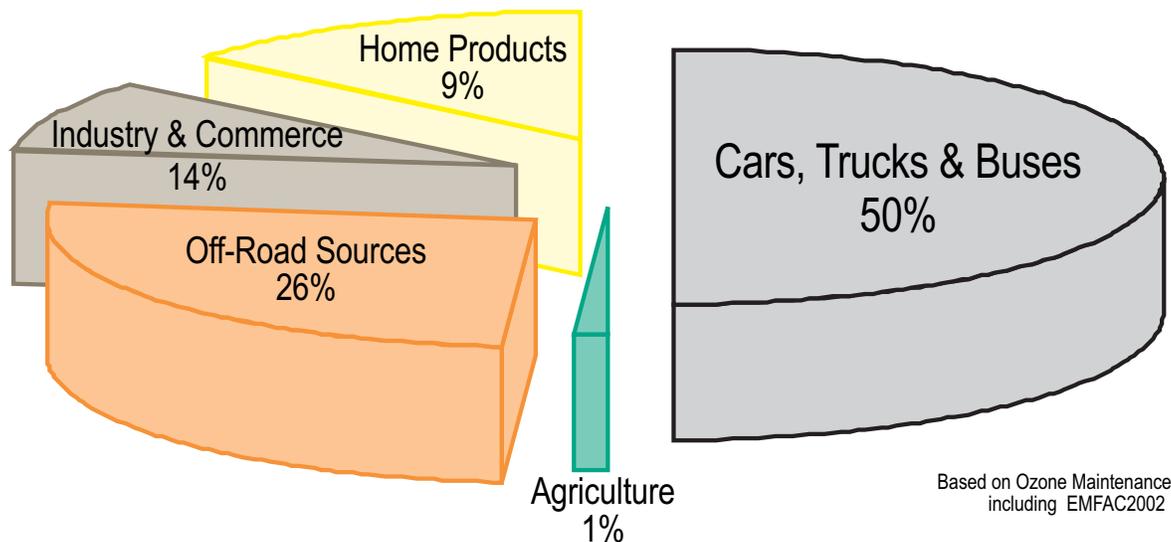
ARB requires vehicle manufacturers to develop engine and emission control systems that reduce specific pollutants. Many newer vehicles are designed to produce even lower levels of emissions than required. These vehicles, called Low-Emission Vehicles, are included in ARB's buyer's guide to cleaner cars on its web site at [www.arb.ca.gov](http://www.arb.ca.gov).

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.

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.

## Emission Sources



## Smoking Vehicle Hotline

The Smoking Vehicle Hotline is an educational program designed to reduce visible exhaust from cars, trucks, and heavy-duty vehicles through the use of a complaint hotline.

The dirtiest vehicles found on our roadways contribute about 40% of the total automotive pollution. A well maintained vehicle is a cleaner running, lower emitting vehicle.

Citizens are encouraged to report vehicles they have seen traveling San Diego's roads and freeways that are emitting excessive smoke.

Vehicles can be reported by calling 1-800-28-SMOKE or through the District's web site at [www.sdapcd.co.san-diego.ca.us](http://www.sdapcd.co.san-diego.ca.us).

# 10 Ways to Clear the Air

You can make a difference in San Diego's air quality. Here are some simple suggestions on what you can do for cleaner air.

- 1** Reduce your driving. Combine errands, carpool, use public transportation, ride a bicycle, or walk. Telecommute or work longer hours fewer days a week.
- 2** Keep your car in good running condition and the tires properly inflated. Or drive a clean-fuel vehicle.
- 3** Don't top off your gas tank. Gasoline spillage contributes to smog. It also contains toxic pollutants.
- 4** Support the smog check program. Removing emission control equipment does not improve engine performance.
- 5** Report "smoking" vehicles. Call 1-800-28-SMOKE to report vehicles with excessive tailpipe emissions.
- 6** Around the home, avoid the use of aerosol spray products. Most aerosol propellants contribute to smog.
- 7** Use water-based paints and solvents. Oil-based paints contain 3 to 5 times more toxic solvents than water-based paints. Keep lids closed and use brushes or rollers rather than sprayers.
- 8** Start your barbecue briquettes with an electric probe or use a propane or natural gas barbecue.
- 9** Use energy-efficient lighting. Raise the temperature level on your air conditioner a few degrees and turn down your heater. Production of electricity contributes to air pollution.
- 10** Use a push or electric lawn mower. Operating an older gasoline-powered mower for one hour produces pollution equivalent to about 40 automobiles.

## Helpful Phone Numbers

Air Quality Forecast .....	(858) 650-4777	Farm & Home Advisor Info Line ..	(858) 694-2845
Air Resources Board .....	(916) 322-2990	Foodborne Illness Complaints .....	(619) 338-2356
ARB Smog Devices .....	(800) 242-4450	Hazardous Materials Information ..	(619) 338-2231
Beach & Bay Hotline .....	(619) 338-2073	Mental Health Crisis Hotline .....	(800) 479-3339
Bees Hotline .....	(800) 200-BEES	Noise Control & Complaints .....	(858) 694-3741
Bus & Trolley - Info Express		Odor Complaints .....	(858) 650-4550
South County .....	(619) 233-3004	Recycling (non hazardous waste) ....	(877) 713-2784
North County .....	(800) 266-6883	Senior Citizens Info Line .....	(800) 339-4661
Burn Forecast for Open Burning ...	(858) 650-4777	Smoking Vehicle Hotline .....	(800) 28-SMOKE
Carpool Information .....	(800) COMMUTE	Social Services Info Line .....	(800) 227-0997
Cal Trans General Information .....	(619) 688-6670	Stormwater Hotline .....	(888) 846-0800
Cal Trans Info Future Freeways .....	(619) 688-6785	Vector Control .....	(858) 694-2888
Coastal Commuter Train .....	(800) COASTER	Water Quality Issues .....	(619) 338-2386
Environmental Protection Agency ....	(415) 947-8000		

# San Diego County Air Pollution Control Board

**Director, Air Pollution Control District**

**Assistant Director**

Citizen  
Advisory  
Committee

Hearing  
Board

**Motor Vehicle Fund Programs  
& Administrative Services**

Public  
Information

Clerical  
& Personnel

Contracts  
Administration

Accounting  
& Finance

Mobile Emission Reduction  
Program Administration

**Engineering**

**Compliance**

**Air Resources  
& Strategy  
Development**

**Monitoring &  
Technical Services**

Chemical

Industrial  
Inspections

Air Quality Plan  
Preparation/  
Progress  
Reporting

Air Quality  
Network

Mechanical

Citizen Complaint  
Investigations

Mobile Source  
Rule Development,  
Planning &  
Emissions Inventory

Monitoring  
& Maintenance

Air Toxics

Violation  
Settlement  
Program

CEQA  
Implementation

Emissions  
Testing

Vapor Recovery

Hearing Board  
Liaison

Meteorology  
& Modeling

Rule Development

Asbestos  
Program

Emissions  
Inventory

Open Burn  
Program

Special Projects  
& Title V

Compliance  
Assistance

Small Business  
Assistance



**AIR POLLUTION CONTROL DISTRICT**  
COUNTY OF SAN DIEGO

<b>Permit &amp; General Information</b>	(858) 650-4700
<b>Air Quality Forecast Message</b>	(858) 650-4777
<b>Citizen Complaints</b>	(858) 650-4550
<b>Public Information</b>	(858) 650-4707
<b>Smoking Vehicle Hotline</b>	1 (800) 28-SMOKE